BUTANE-PROPANE News

HEADQUARTERS FOR LP-GAS INFORMATION SINCE 1931

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- Pay for themselves in time.
- Recover up to 300 gallons from a single tank car.
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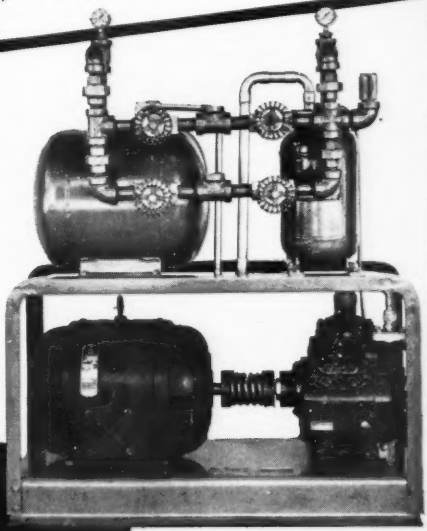
Operators lose thousands of dollars in fuel by failing to recover the vapor remaining in tank cars and trucks after the liquid is withdrawn. The Roney Vapor Compressor will recover this gas...as much as 300 gallons from a single tank car.

The Roney vapor differential method of liquid and vapor transfer has been in use since 1937. All types of transfer operations (Loading, Unloading, Vapor Recovery, Cylinder Filling, etc.) are accomplished quickly, safely and economically.



..C. RONEY INC.

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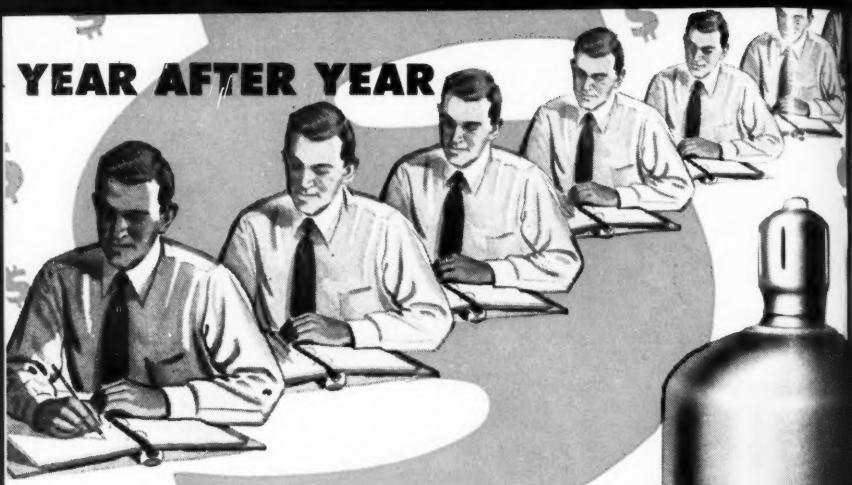
INGLEWOOD, CALIFORNIA

OCTOBER, 1948—50c per Copy



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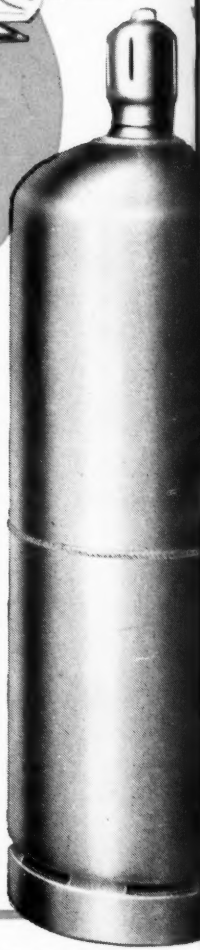
Influence Your Profits

Consider the advantages of Hackney L-P Gas Cylinders—and remember they save you money *not once but hundreds of times* in the course of years.

For instance, Hackney Cylinders—strong and durable—are lighter in weight, providing repeated economies. They save in shipping charges. They save truckers time and effort. They mean less wear and tear on trucks—and more cylinders can be shipped per truckload.

Another item of expense minimized by Hackney advantages is maintenance cost. The "scalloped" foot ring, for example, is exceptionally strong, makes cleaning easier and faster and permits thorough inspection. The finishing procedure produces not only a better looking cylinder, but one that needs less re-painting.

So, when selecting cylinders, choose wisely. Select the cylinders that mean repeated economies year after year. For full details on Hackney Cylinders, *write us.*



Hackney MILWAUKEE

Pressed Steel Tank Company

Manufacturers of Hackney Products

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CONTAINERS FOR GASES, LIQUIDS AND SOLI

Optionally furnished with side female pipe tap or male threaded tap connections. Dimensions 8" long x 7-7/16" wide x 10-5/16" high. Weighs only 8 lb.

. . . with these *little* meters you'll *sell more* LP-GAS service

METERED domestic outlets are a strong selling argument for LP-gas service. Your customers and potential customers want them . . . for meters inspire *confidence.* They make possible service comparable to a utility operation. They effect many distribution economies. And in today's competitive fuel market you just can't afford to operate without them.

ECONOMICAL TO BUY AND MAINTAIN . . . SAFE TO USE

NOW you can meter your domestic services *economically* and *dependably.* For the Rockwell-Emco No. 00 is designed especially for this purpose. It's small and light in weight. It's made with a pressure cast aluminum alloy housing that won't rust or corrode; that's tested to 10 psi working pressure. For complete safety there is only one gasketed surface to seal. And the working mechanism is designed to give years of trouble-free service—can be easily and economically replaced as a unit when required. Write for bulletin 1163.

Larger sizes available in Emco No. 0, 1 and 2 models

PITTSBURGH EQUITABLE METER DIVISION
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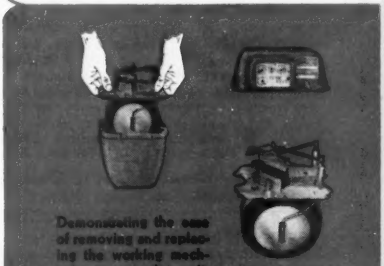

Demonstrating the ease of removing and replacing the working mechanism as a complete unit.

Few dealers have the facilities to repair meters. So we've designed the simplest repair plan ever. After a period of years the entire mechanism can be lifted from the meter case and replaced with a new unit that has been factory tested for accuracy. Anyone can make the switch in a few moments time.

ROCKWELL-EMCO NO. 00 LP-GAS METERS

BUTANE-PROPANE News

OCTOBER, 1948

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LETTERS

●**BUTANE-PROPANE** *News* **welcomes letters from our readers, but it must be understood that this magazine does not necessarily concur in opinions expressed by them.—Editor.**

Gentlemen:

Please let us know the specific gravities of 550 Btu and 600 Btu mixtures of butane-air gas.

E.K.B.

Texas

The specific gravity of a mixture of gases can be determined by averaging the specific gravity of each.

One cubic foot of a 550-Btu gas would contain $\frac{550}{3267} = .168$ cu. ft. of butane vapor.

The balance of the mix, .832 cu. ft. will be air. (Pages 22-23, Handbook Butane-Propane Gases.)

Specific Gravity of air = 1

Specific Gravity of butane vapor = 2.006

then

$.168 \times 2.006 = .336$

$.832 \times 1.000 = .832$

1.000 — 1.168 specific gravity of 550-Btu mix.

The same steps will determine the specific gravity of a 600-Btu mix to be 1.184 .—Ed.

●

Gentlemen:

One of our customers is using a non-insulated sheet metal (galvanized) tank 48" long by 36" deep by 26" wide for a degreasing vat for aluminum frames. 160 gallons of water and Oakite solution are to be heated to 180° F., temperature rise of about 120° F.

Electric heating is not satisfactory, so they are considering converting to propane; however, since they are not certain whether they will continue with the hot method, they do not wish to go through too great expense should it be necessary to revert to cold degreasing. For this reason they would like some idea as to the cost of an immersion burner either at the bottom or side of the vat, whichever is best, and also the amount of fuel required to maintain 180° F. for an 8-hour period daily.

S.J.S.

Wisconsin

We would estimate the heat loss by radiation and the heat required to bring the water up to temperature to be about 282,000 Btu per 8-hour day.

Additional heat will be required to heat up the parts that are being degreased, and this will vary with the number of pounds per day treated and the in-and-out temperature of the metal. If you have a record of the amount of electricity used, it can be converted into the equivalent amount of gas to be used.—Ed.

●

Gentlemen:

We would like your advice on a couple of questions that have given us some trouble.

(1). We have had considerable discussion here on the size and type of pipe that should be used as a main line on particular installations. For example, take 2 150,000 Btu unit heaters, 5 30,000 Btu radiant heaters, 1 30-gal water heater, and a large kitchen range, all connected on one 1000-gal. propane tank.

a. What size pipe should be used for the main line from tank to building, and should it be steel or copper?

b. Would it make any difference, as far as the size of pipe is concerned, if the fuel is propane, butane or a mixture?

(2). One of our customers has complained that her unvented radiant

heaters in the bedrooms have caused her curtains, bed spreads, satin comforters, silk and rayon underwear, and a crepe housecoat (a bright aqua color) to fade in streaks.

a. Is this possible, and if so what can be done about it?

G.C.E.

Tennessee

Your peak load with all appliances on is about 700,000 Btu's per hour, which is equivalent to approximately 220 cubic feet per hour. On page 70 of the Bottled Gas Manual is a table of pipe capacities allowing a maximum of .55 inches water column drop.

From the table, 1-inch copper tubing will handle the flow for a distance of 13.2 yards and 1-inch standard steel pipe, 17.2 yards. For practical purposes the same sizing can be used for butane, propane, or a mix.

The products of combustion of LP-Gas are CO_2 and water vapor. It is possible that the dyes in the cloth are subject tc deterioration due to the high humidity and the warmth in the room. We would suggest the use of vented heaters.—Ed.

•

Gentlemen:

Referring to your issue of May, 1948, regarding the relative cost of heating with propane at $.08 per lb. compared with fuel oil at $.12 per gallon, etc.

Our retail price of propane is $.18½ per gal. We compete with fuel oil ranging from $.14 to $.20 per gal. Only recently a leading heating engineer tried to compare the two fuels at these prices, figuring 75% efficiency for each furnace and our propane was considerably more expensive. He will concede that a gas floor furnace or space heater could compete with the pot-type gravity feed oil heater, but could not see how it could compare with gun-type or vaporizing type oil furnaces.

However, he would like to be convinced because of the added business their company could do. The question is, are we using the proper method of figuring or have we omitted something? Could it be possible that in the western states they do not use gun type oil burners and were comparing floor furnaces to pot-type oil burners.

Here are some other facts.

In Michigan you heat 9 mo. of the year.

Fuel oil (No. 3) is rated at 146,000 Btu per gal.

Propane at approximately 91,000 Btu per gal.

Stack analysis on oil burners is taken up to 74% and then back to approx. 70%. Any help you may render will be sincerely appreciated and, of course, it may open a new market here in Michigan.

G.S.

Michigan

Gas versus oil heating, particularly in the colder regions, can be the subject of much argument. Where an expensive and efficient oil installation is made, it can be operated at relatively high efficiency and, if properly maintained, will continue to do so.

However, experience on domestic installations indicates that many are not properly maintained and the loss from the theoretical efficiency is high. Maintenance cost and power cost for the burner must also be taken into consideration.

We doubt you can make a very great showing in savings changing over from oil to gas on steam boiler installations with prices of the two fuels about the same. However, many gas installations are being made in the Northwest where the heating load is long and the temperature severe by selecting the proper type of gas heating equipment for the job at hand.

The convenience and cleanliness of gas installations and oftentimes the lower first cost make them attractive for many commercial and residential applications.

We refer you to "The Bottled Gas Manual" for comparions of oil versus propane for heating.—Ed.

•

Gentlemen:

A discussion resulting in a friendly argument has prompted this letter. The first question is why use a fixed orifice (rather than an adjustable orifice) for propane (bottled) gas? I maintain that if the orifice area necessary to proper input is "spread" around a "needle" that the circumferential opening will be so thin that

due to the specific gravity and density of the gas, proper velocity will not be set up for good inspiration, etc. Whereas, if that orifice area is "Collected" in the form of a circular opening, such as a drilled hole, there is not such an impediment.

Second, why is a fixed orifice not used with 530 Btu butane-air gas? If a domestic range were specifically made for 530 Btu butane-air, why couldn't a fixed orifice be used? I maintain that it can be but other servicemen say that individual differences in burners on the same or similar range necessitate an adjustable orifice. These servicemen do not use the flow meter but adjust by an experienced eye.

I have, as a member of a conversion crew, converted domestic ranges on which it was necessary to remove the needle (mixing pin) for 1300 Btu butane-air in order to get good combustion. Our inspectors passed the job as satisfactory.

What are your answers to these questions?

O.H.R.

Wisconsin

Your reasoning is correct in the preference of the fixed orifice for high Btu gas.

An additional reason is that it is very difficult to set the adjustable orifice close enough to provide the proper mixture and a very slight additional opening or closing makes a large difference in the amount of gas to the burner.

Also, when closed enough to give the proper amount of gas, it is entirely possible that the needle valve is touching the seat on one side, thus allowing the gas to leave the orifice on an angle rather than straight, which causes poor induction.

For low Btu gas, the adjustable orifice is a convenience and good combustion can be obtained. Fixed orifices can be used, but the time and care required to get the perfect orifice for each burner is disproportionate to the results obtainable with the adjustable orifice.

Removal of the needle would make the burner essentially a fixed orifice burner. This would be comprehensible if you were changing from a high Btu gas to 1300 but not changing from a 550 Btu gas up, unless pressure conditions had been changed materially.—Ed.

•

Gentlemen:

One of our customers proposes to purchase a 1000-gallon butane gas tank from us and install it himself.

This tank will serve eight tourist cabins, arranged in two rows, four to the row, requiring 200 feet of main for each row and 100 feet of connecting main between the two rows.

Customer proposes to use 467 regulator at tank, reducing pressure to about 10 lbs. and use ¼" main. A regulator will be used at each cabin to step pressure down to required amount for appliances.

Consuming appliances in each cabin will consist of gas apartment range, water heater, 30,000 Btu space heater, 4-ft. Servel refrigerator.

Would it be good practice to make such an installation with ¼" or ½" main?

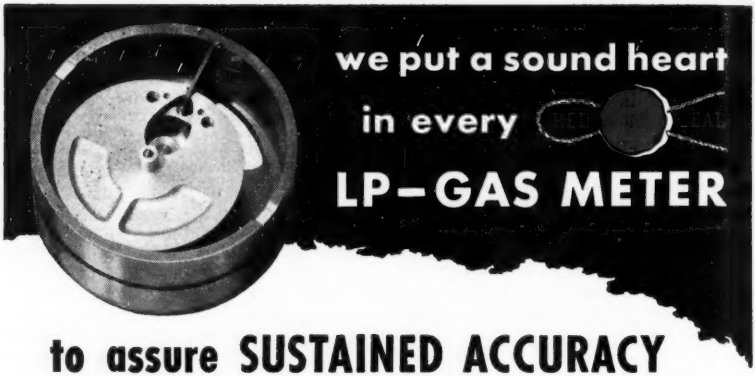
E.M.G.

Alabama

We would suggest that your customer keep his distribution system at low pressure and install a low pressure regulator at the tank.

We would run 1" lines from the tank to the first cabin in each row and ¾" the balance of the way. This will eliminate the possibility of condensate forming in the lines and will make a workman-like job.

The use of ¼" pipe is not recommended for anything but short leads to appliances and even then it is a flimsy installation.—Ed.

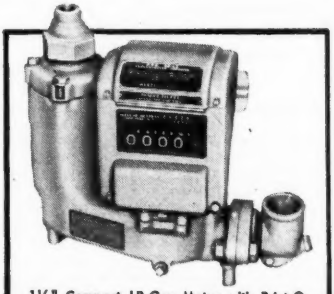


to assure SUSTAINED ACCURACY

THE MEASURING CHAMBER—heart of Red Seal Meters—is credited with an enviable record for *sustained accuracy* by LP-Gas marketers. It is a precision engineered and manufactured *functional unit.* Placed inside, but separate from the main casing, it is completely enclosed by liquid at the line pressure —protected against distortion from without and within.

By machining the chamber and piston to close tolerances, a positive capillary seal is achieved. No liquid can pass through the chamber without actuating the piston. Furthermore, the all-metal piston is the *only* moving part in the chamber. No piston leathers, springs and other parts to wear and cause trouble! A working pressure of 250 lbs. per square inch is provided for safety's sake. Such ruggedness, simplicity and precision assure long life, sustained accuracy and attention-free service. And, every user has the economy of an exclusive Unit Replacement Plan that eliminates costly repairing and rebuilding in the field.

Ask our nearest branch office or Neptune petroleum equipment jobber all about these profit-protecting Red Seal LP-Gas Meters.



1¼" Compact LP-Gas Meter with Print-O-Meter Register for tank trucks, bulk plants and dispensing units. Ask about 2" Type D Meter and Direct Reading and Round Dial Registers.

A 590A

NEPTUNE RED SEAL METERS

NEPTUNE METER COMPANY. 50 West 50th Street, New York 20, N. Y. .. *BRANCH OFFICES:* Atlanta • Boston Chicago • Dallas • Denver • Kansas City, Mo. • Los Angeles • Louisville • Philadelphia • Portland, Ore. San Francisco • NEPTUNE METERS, Ltd., Long Branch, Ontario, Canada

COMMENT

SIGNIFICANT TO THE INDUSTRY was the recent safety-service school sponsored by the Butane Gas Dealers of Mississippi and conducted by the National L-P Gas Institute, Tulsa.

For two weeks in September, daily instruction courses were attended by a hundred dealers and their employes which resulted in much profit to them, according to reports.

Other state associations are going to follow the same procedure and the end result will be a greatly improved understanding of service and safety by men all over the country who are making installations and servicing LP-Gas equipment.

•

WHILE THE DOMESTIC DEMAND of LP-Gas last year totalled more (52.1%) than all other uses, dealers all over the country can look to commercial institutions as one of the biggest sources of future business.

There are substantial profits in original installations of appliances and equipment and a steady, healthy fuel requirement that goes on month after month, year after year.

Usually, commercial installations involve no more service problems than domestic ones, but the net profits are many times greater.

How many restaurants, bakeries, hotels, hospitals, schools are there in your territory that you haven't even approached yet?

Give them a call!

•

YOU CAN PRACTICE SAFETY without a college education or an engineer's degree.

A sincere interest in your employer's property, a regard for the welfare of your associates and a desire to perform a given job in the best manner are the basic requirements. Constant alertness and unceasing care can be added profitably.

•

ORDERS ARE STILL COMING IN for the June Safety issue of Butane-Propane News. The original edition of twice the regular press run was quickly exhausted. A reprint has been made and copies sell for a dollar each.

If industrymen will just follow the good practices recommended by this safety issue, there will be fewer accidents and better installations.

By Ed.

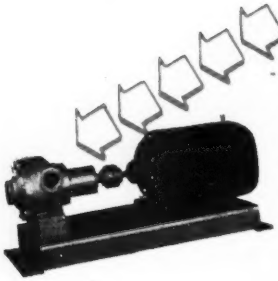
TWO NEW SIZES

SMITH PRECISION Butane-Propane PUMPS

TC-1044H MC-1044H

BOTH RATED AT 35 GPM

Model TC-1044H is recommended for medium-sized delivery trucks where the majority of deliveries are small in quantity. For that purpose it may be run at 500 RPM with an output of 20 GPM. However when fast transfer is desired, this same pump may be operated safely up to 900 RPM, if provided with 2" inlet piping. At this higher speed it will deliver 35 GPM to large tanks.



Model MC-1044H has a capacity of 35 GPM at 1800 RPM direct connected to explosion-proof electric motor. May be supplied complete with steel base, flexible coupling and 1½, 2 or 3 HP motor, depending on service requirements.

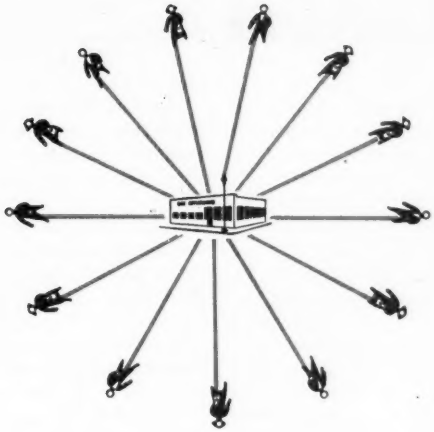
Incorporated in both these models is the exclusive Smith feature of self adjusting packing, which completely eliminates the need for packing adjustment or lubrication of any kind.

The weight and mounting dimensions of these new models are identical with the corresponding earlier 20 GPM models T-1044, TC-1044, M-1044 and MC-1044, and they are therefore directly interchangeable.

Write for the new catalog sheet on models TC and MC-1044H to:

SMITH PRECISION PRODUCTS COMPANY

1135 MISSION STREET • SOUTH PASADENA • CALIFORNIA • PHONE PYRAMID 12293



13 Ways to Win Customers

Sales-Minded Dealer Adopts Intensive Selling to Leave Electric Competitors Behind

By HARRY L. SPOONER

AMONG the enthusiastic promoters of bottled gas and appliances in the midwest is James M. Cook, manager of the appliance department of Black Brothers, 401 East Main St., Galesburg, Ill. The Black Brothers store has several departments, including hardware, gas and electrical appliances, sporting goods and plumbing supplies. The appliance department includes appliances for combination coal and gas (either natural or bottled), bottled gas; natural gas; and electric. The store also has the dealership for the "Philgas" brand of fuel.

"Some prospects seem afraid that the cost of bottled gas will be prohibitive," says Mr. Cook. "We claim, and back up our claim, that a bottled gas range serving a family of four, can be operated for $1.50 a month. The average family of four uses 18 20-pound tanks of our gas a year. We convince new prospects by quoting costs of users whom they know and who will verify our statements.

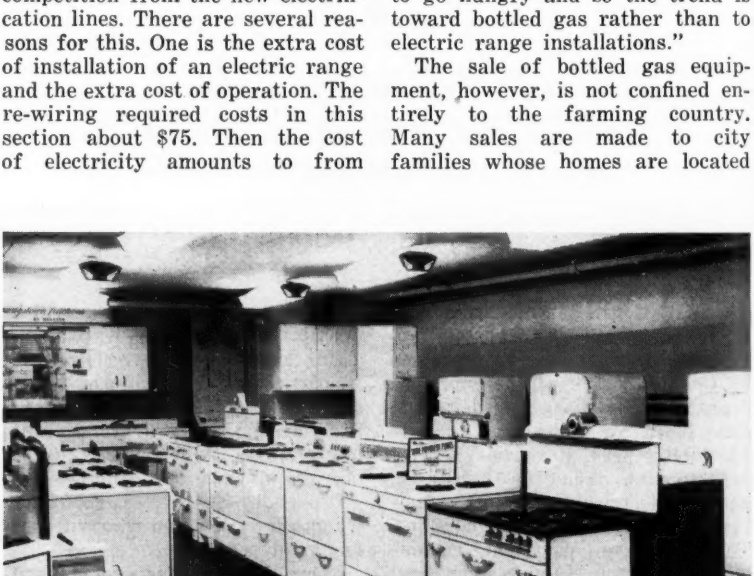
"Our Philgas business is self-service. We furnish two 20-pound tanks to a customer. We stress to prospective users that we attach these to the house if possible, and if not, on a mounting close to the house. This makes it possible for

customers to change the tanks without any trouble in the winter time. With the two-tank installation, when one tank is exhausted, the customer has a whole month to bring in the empty tank and get another full one. As practically all farm customers have to come to town once a week or oftener, this is no hardship. If they drive to our store, we will carry in the empty tank and carry out the full one for them. We have customers that come from as far away as 50 miles.

"We have experienced no serious competition from the new electrification lines. There are several reasons for this. One is the extra cost of installation of an electric range and the extra cost of operation. The re-wiring required costs in this section about $75. Then the cost of electricity amounts to from $2.45 to $4 a month while our gas service is only $1.50 a month for the average family of four.

"Added to the extra cost of installation and operation is that of interruption to service. Our territory has been subject for the last two or three years to frequent severe electrical storms and high winds that have blown down many trees across the electric wires and put them out of commission. In some cases it has been some time before service could be restored. Farmers, of all people, don't like to go hungry and so the trend is toward bottled gas rather than to electric range installations."

The sale of bottled gas equipment, however, is not confined entirely to the farming country. Many sales are made to city families whose homes are located



A section of the range department at Black Bros. store in Galesburg, Ill.

in new subdivisions beyond the natural gas mains. Right now, one of these communities will soon have 35 new homes and Mr. Cook has already made arrangements to install bottled gas service in them. The rapid growth of the city is way ahead of the ability of the utility company to build gas mains. In addition to these city dwellers, quite a few city residents having natural gas available still prefer bottled gas.

Mr. Cook became connected with Black Brothers three years ago. During his first year, he sold 75 gas ranges. Last year he increased this number to about 200. This year, up to the end of June, he sold 204. These include both bottled gas and natural gas ranges, but they run about 50% each. June was the peak month for bottled gas ranges, in which 28 were sold, or more than 1 for each working day. Although this year will be an all-time high in sale of gas ranges for the firm, it is planned next year to greatly increase the volume.

Won't Part With Gas Ranges

"We advertise," says Mr. Cook, "for trade-ins of old gas and coal ranges on new gas ranges, either bottled or natural gas, but we have never taken in an old bottled gas range simply because nobody who has one wants to part with it.

"Whenever we can, for a promotion, we buy a carload of ranges at a time. We do not cut prices on our appliances or our gas and everybody pays the same price. Although we have some competition that cuts the price of gas in order to sell an appliance, we do not try to meet it.

13 WAYS TO A SALE

One price to everybody.
First class service.
Provide kitchen lay-outs.
Test stoves before installations.
Newspaper advertising.
Window displays.
Exhibits at fairs.
Public demonstrations.
Direct mail solicitations.
Signs on trucks.
Word-of-mouth.
Personal sales calls.
Large stocks to show.

"We have two of the best servicemen in the city. They take time at every installation to explain thoroughly the use of the range and this cuts down the number of service calls. Many users who have never had bottled gas before come in to tell us how fine their ranges operate and often this is because the servicemen properly instructed them in the first place."

Several brands of bottled gas ranges are carried. With this array of brands, any style is available to customers, including standard, apartment house and hotel sizes, with divided, clustered or staggered top burner arrangements.

In addition to gas ranges, Servel refrigerators, space heaters and water heaters, all for bottled gas, are sold, with an ample stock kept on the floor.

Terms to customers are 20% down and 24 months to pay the balance in equal monthly instalments.

Several methods of promotion

are used. Personal solicitation by two salesmen is one of these. So far these salesmen have worked on selected prospects secured from various sources. However, these will soon be given regular territory assignments and these districts will be covered intensively. Salesmen report every stop made. A card file is kept and the names followed up periodically. Sales do not stop when a gas range is sold but efforts are made to sell other appliances.

Carries Newspaper Ads

Newspaper ads are extensively used. The store allocates its advertising according to amount of sales, using both display and classified space. Usually, each department has separate ads and each ad features only one item or one group of items. Display ads for bottled gas ranges are used at least twice a month. However, Mr. Cook has found classified ads to pay better although they are more expensive. These ads are not the usual short ones, but run from 3 to 6 inches, with plenty of white space so they can be read easily. "We have found," says Mr. Cook, "that during the busy seasons, farmers are limited to time and will not read through a large display ad but they do read classified ads."

Window displays run neck and neck with newspaper advertising. The windows are lighted until 11 p.m. each night. One window is devoted to gas ranges all the time. These ranges are also lighted up, with drawers open so window shoppers can see just what they look like.

The appliance department is located in the basement, where all models are shown. However, a small display is also kept on the first floor near the stairway to the basement, on which a placard is placed, saying "Appliance Department in Basement."

In addition to window and floor displays, exhibits are made at fairs and home shows. The latter, especially, have been very prolific in securing new prospects. Galesburg has two home shows a year—one each, in spring and fall. These are sponsored by the Junior Chamber of Commerce, of which Mr. Cook is a member. At the last home show, Mr. Cook had the largest booth, with a frontage of 30 feet, with a gas range featured as the main attraction.

Special Demonstrations Given

Public demonstrations are held frequently in the department and private demonstrations given whenever a customer desires it. Any range in the store can be wheeled to the bottled gas inlet for these demonstrations.

Direct mail is used four times a year when a descriptive folder of a gas kitchen is mailed to a list of about 900 householders on Galesburg rural routes.

The department truck is made to contribute to the promotional efforts. It carries an ad for bottled gas along with the firm name. Whenever this truck makes two or more trips over the same road, new prospects who see it begin to come into the store. "We take as much time with those who are 'just looking' as those who intend to buy," says Mr. Cook, "because these look-

ers will eventually become purchasers.

"Word of mouth advertising is one of our best methods of promotion. We get this goodwill advertising not only from the operation of the appliances we sell but also from the service we render. In spite of the fact that our service men explain the operation of the gas range, some purchasers manage to get them out of kilter. We render service to these persons, even though it costs us something, because we figure their goodwill is worth it.

"We will also go out to a farm or go down to our store after hours, if necessary, to accommodate customers and prospective customers.

Make Adjustments at Shop

"One thing we do that eliminates a lot of trouble is to connect up every range in the store before it is delivered and make any adjustments necessary. Then, when it is installed in the home, it is not necessary to mess up the kitchen floor. This is much appreciated by customers, so their goodwill is secured, not only for the speed with which it is connected up and the lack of dirt, but also because it works perfectly at once."

Another service much appreciated is that Mr. Cook can draw plans for a new or remodeled kitchen without cost to the home owner.

"Although many bottled gas appliances have been installed the past two or three years," says Mr. Cook, "the field is still very fertile for new installations—in fact, some neighborhoods, even where electrical lines have been established, are practically untouched. The field offers great possibilities and we intend to develop these as rapidly as possible. Even where electricity is available, householders will install bottld gas ranges and water heaters. The fact that these people buy bottled gas from us keeps us in touch with them—and we use this to develop sales of further gas appliances."

Gas Range Sales Reach New Six Months' Peak

Residential gas range sales reached an all-time high of 1,444,000 units during the first six months of 1948 and exceeded by 283,000 the sales during the first six months of 1947, the previous peak year, according to the Gas Appliance Manufacturers Association.

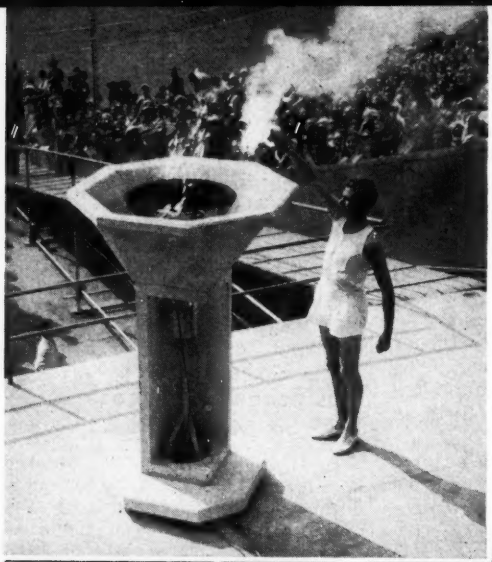
Total 1948 annual production is expected to exceed the previous peak year by approximately 500,000 and reach 2,800,000 units.

Gas ranges for use with LP-Gas (bottled) totaled 375,000 units during the first six months of 1948 and approximated 26 per cent of the industdy's sales. This compares with 290,000 such units sold during the same period of last year.

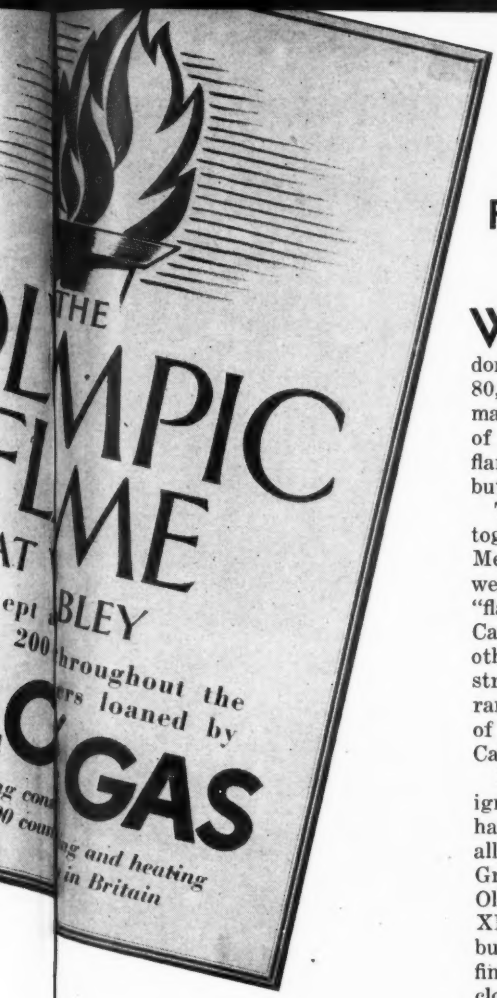
California Issues Amendments To State Safety Orders

Copies of the revised California Orders can be obtained from the State Printing Office at Sacramento for 25 cents per copy.

These new orders incorporate some important changes with which manufacturers and operators doing business in California should become acquainted.



At left: The lighting ceremony and the burning butane flame.



This poster told all London of butane's part in the Olympiad.

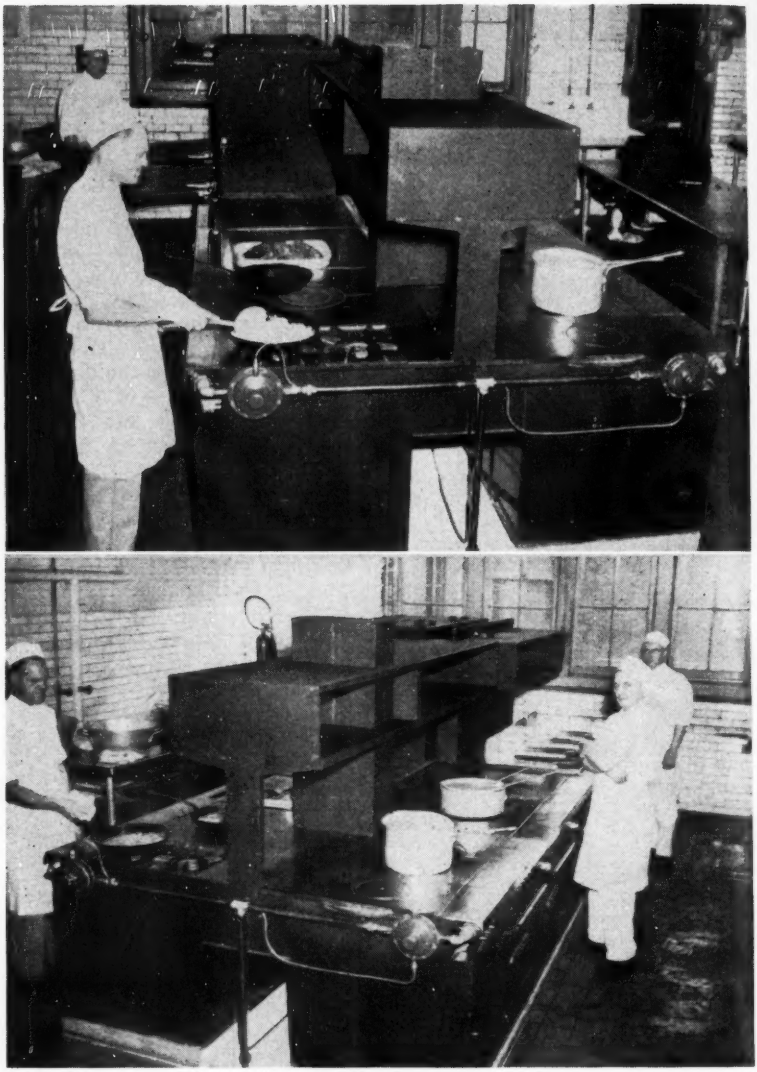
Famed Olympiad Torch Burned Butane

WHEN the flaming torch of the Olympiad was fired in London's Wembley stadium before 80,000 spectators early in July, marking the opening ceremonies of the international games, the flame that leapt from the torch was butane inspirited.

The Calor Gas Co., Ltd., London, together with officials of the Shell-Mex & B. P., Ltd., organization were responsible for supplying the "flame seen around the world"—Calor furnished cylinders, and the other firm made the necessary construction and gas-supplying arrangements, according to S. Shaw, of the distribution department of Calor Gas.

Before the LP-Gas flame was ignited, a relay team of 1600 men had brought the igniting torches all the way from Mt. Olympus in Greece, traditional home of the Olympic games. Throughout the XIV Olympiad, once lighted, the butane torch burned day and night, finally being extinguished in the closing ceremony of the games.

The accompanying photographs give a fair idea of the lighting ceremony, the crowds and the scene. The use of butane for this unique purpose aroused widespread interest among LP-Gas dealers in the British Isles.



Cook 9900 Meals Daily On Propane Commercial Equipment

By ED TITUS
Eastern Editor, Butane-Propane News

ONE of the largest commercial cooking installations using propane as a fuel is now in operation at the State Hospital, Middletown, N. Y.

Formerly cooking at the hospital was handled with coal. The arguments that persuaded the New York state authorities to put in propane equipment were presented by The Fuelgas Corp., with offices at Chester, N. Y. After getting the go-ahead, this company made the installation of Vulcan ranges, and also is supplying the gas.

An assertion that this may be the largest propane installation for cooking in the world is based on the number of persons served—said to average 3300 patients—as well as on the cost of the equipment sold for the job.

Cleanliness and ease of operation were the principal sales arguments used with New York state's purchasing authorities. No attempt was made to compete with coal on price. Morris Birnbaum, of Fuelgas, stated, however, that by careful watching of operation, combined with efficiency of the new propane equipment, they have been able to show economies on what the coal costs had been.

At the request of the hospital people, Mr. Birnbaum said, stove space equivalent to what had been used with coal was installed for propane.

This is said to have proved to be greatly in excess of present requirements, since the propane ranges could perform far more efficiently.

Fuelgas supplied the ranges and installed them. There are six separate kitchens in the hospital, each kitchen served by not less than two 500-gallon water capacity tanks, with a total of 16 500-gallon tanks.

In addition, the staff house kitchen is served with a 400-pound capacity cylinder, and approximately 18 doctors' houses and apartments each with a 200-pound cylinder. The cylinders, as well as the tanks, are filled by tank trucks.

About 44 ranges, all designed for LP-Gas, were supplied—also 11 double decker roasting ovens as well as griddles and fryers. Some

OPPOSITE PAGE: Views of commercial ranges in two of the six propane-equipped kitchens at State Hospital, Middletown, New York.

cooking continues to be done at the central steam plant.

In one location, Comfort Farm, where about 75 men are fed, a propane range replaced an oil burning one.

In an unofficial check after the first five months of operation, it was found the cost of the gas consumed was less than the coal bill for the like period, Mr. Birnbaum stated. This resulted partly from efforts of Fuelgas to educate employes of the hospital to economy in use of fuel.

The new methods contrasted with what is said to have been previous inefficient use of coal. There is a suggestion here as to how an enterprising LP-Gas dealer can get the edge on competing fuels by showing a potential, large customer the most efficient possible ways to use LP-Gas.

Fuelgas people checked with head chefs to be sure that only enough burners were left on to do the job efficiently.

Efficiency of ovens with controlled temperatures proved a great asset in holding down costs. By contrast, it is said to have been the practice to let the coal fires burn all night. A survey indicated that one of the kitchens had 16 sections of coal ranges, which were fired continuously, although they might have needed to use as few as eight on certain days.

One of the problems overcome had to do with figuring how to get adequate pressure to all parts, and avoid creating pressure failures in any bank of ranges. Fuelgas was limited on the size of metal pipe to 1-inch iron pipe which was in stock and had to be used. The problem was solved by putting high pressure gas through the mains. This gas was brought in on both sides of a bank of ranges. Regulators were placed close to the manifolds.

The tanks were placed at quite a distance from the kitchens, due to the fact that patients move around considerably. For this reason also the installations are below ground, with one exception.

Everything has been done to make the installations safe. For example, in each kitchen there is

Two of these "Vulcan" radiant broiler au-gratin ovens are in daily use at the Middletown institution.

provision enabling the entire system to be shut off.

The total cost of putting in the new equipment is said not to have been much over $10,000. In obtaining the job of installing the ranges, Fuelgas was bidding against various equipment supply houses, and bid low, because of their desire to handle the job from beginning to end, without an arrangement with other contractors.

They are endeavoring to operate this and other installations on the basis of a utility operation, with deliveries of fuel made as needed, and bills rendered on a monthly basis.

In addition to the other equipment, Fuelgas has delivered 15 gas refrigerators to the doctors' homes.

Among its other economies the installation of the new propane cooking equipment is said to have resulted in a saving on meat shrinkage.

This large cooking job at Middletown serves to point up the great opportunity for propane and butane operators to sell big installations for cooking, not only to government institutions, but also to camps, hotels and restaurants.

Interior Secretary Krug Authorizes Allocation Plan

A voluntary allocation plan for the petroleum industry, under Public Law 395, has been made effective at all customer levels by order of Secretary of Interior Krug. Under this plan the industry is free to make voluntary agreements covering the distribution of available supplies of scarce commodities with anti-trust immunity.

It provides that a participant shall "equitably distribute its available supplies among all customers, after filling essential requirements for the military, food production, and services essential to public health and safety, but not limited to essential transportation and communication." Primary consideration is to be given to the pattern of distribution of the preceding season or year. Suppliers are required to advise their customers at least once every three months as to the formula used.

To assist in carrying out this plan, the National Petroleum Council is authorized to set up district committees representing all segments of the industry whose function will be to assemble data and make supply, demand and inventory studies and, to make recommendations for adjusting refinery yields and for the more effective distribution of petroleum products to prevent hardships at the consumer level. Such recommendations are subject to the disapproval by the Director of the Oil and Gas Division of the U. S. Department of the Interior. The plan terminates Feb. 28, 1949.

Westinghouse Electric Installs Propane for Winter Heating

Leon R. Ludwig, general manager of the Westinghouse Electric Corp. operations in Buffalo, N. Y., has revealed that the company is installing a propane gas plant at the big Buffalo works large enough to assure full production this winter.

Last winter the copper wire department of the plant, a key unit, was hard hit during the cold weather when the plant cut consumption of gas to 20% of normal. No estimate on cost of the installation was given.

New "Shangri-La" of the West *Goes LP-Gas*

IN the heart of the Southern California desert is one of an unique and almost fantastic, real estate developments.

Favored with a fine watershed from the north slope of the San Bernardino mountains, shallow wells bring to the surface an abundance of cool, crystal-clear water.

Known as Apple Valley Ranchos, high on the Mojave desert, and about 90 miles from Los Angeles, this sage brush and cactus covered land is being transformed into a veritable Shangri-La by a young and wealthy California oil man. The plan calls for complete development into a restricted residential community of several thousand acres of land in one of the choicest spots in the world for healthful living.

Here in Apple Valley are laid out acre estates where the retired person may find peace and quietude. Various restrictions covering archi-

ABOVE: Entrance to Apple Valley Ranchos, and (below) a typical desert dwelling of the community. The San Bernardino mountains in the background.

OPPOSITE PAGE: Apple Valley Ranchos on a California desert. At the Dude Ranch hotel in the left foreground are three 2,000-gallon LP-Gas storage tanks.

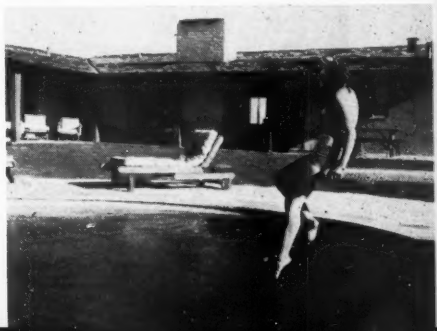
tectural design, costs of building, etc., assure the discriminating buyer of a long and lasting protection to his investment and to desirable future community environment.

Here millions of dollars have already been spent during the past several years in providing streets, water supply, community buildings, parkways, safety under-passes for pedestrians, etc. And here, where money is secondary to personal comfort and convenience, LP-Gas has, since the very first opening day, provided fuel for heating, cooking, refrigeration, water heating, water pumping, and scores of other duties about the home and business establishment!

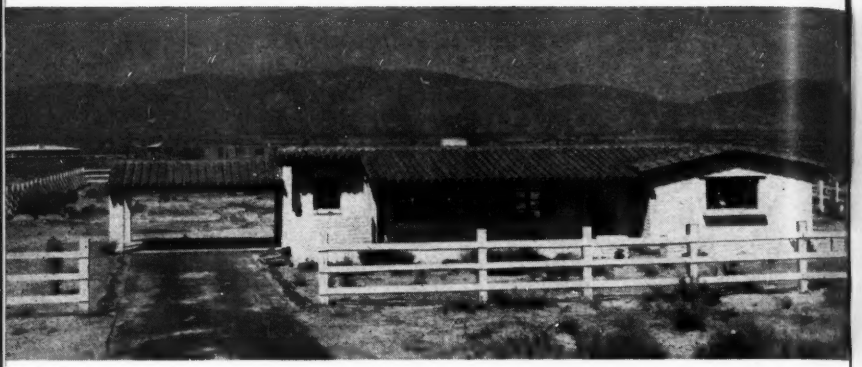
For these luxurious homes, of which approximately 160 have now been completed, Buehler Tank and Welding Works, Los Angeles, has supplied LP-Gas plants with fuel storage large enough, in almost every instance, to last the entire season.

LP-Gas plants within the Apple Valley Ranchos average between

Even though on the desert, swimming pools are possible — and doubly inviting.

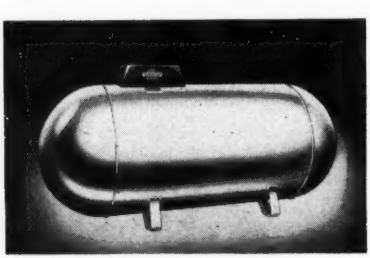


By KENNETH COOPER
Sales Manager, Buehler Tank & Welding Works, Los Angeles



Another style of desert home, showing large supply tank at right, and the wide, raw desert beyond, relieved by oddly-shaped Joshua trees.

250 and 500 gallon capacity, each. In several instances the fuel is used to heat water for swimming pools. Construction of the Dude Ranch hotel, strictly Western in architecture and appointments, includes gas storage of 6,000 gallons. This installation, alone, provides fuel for three million Btu per hour output. Drawing from this supply of fuel is a 750,000 Btu boiler for the hotel's swimming pool. Also, 48 35,000 Btu heaters are installed in individual sleeping cottages. A million Btu per hour consumption in the kitchen is consumed in four bake ovens, water heaters, and other appliances.



All over the Rancho property are to be seen these Buehler-made, LP-Gas storage tanks for the desert dwellers who can now enjoy city comforts far from metropolitan centers.

150 Installations Already Made

Over 150 individual LP-Gas installations at Apple Valley Ranchos have already been completed, with scores of others under way. Dave Lowen, of Apple Valley Ranchos Butane-Propane & Equipment Co., is the very busy man responsible for these fine butane-propane installations. He is the principal supplier of fuel to this entire area. Mr. Lowen and his crew have made practically all of the installations at Apple Valley Ranchos. Equipment is sold outright to the customer by him. Buehler LP-Gas plants have been used exclusively by Mr. Lowen, purchases of these

GOLD ON THE DESERT

TO MANY PEOPLE, the desert would not be an inviting spot to start an LP-Gas business, but Dave Lowen felt differently when he located his plant in Apple Valley, California. First, he knew something of the charm of desert living that is calling so many Californians to the so-called waste places, and, besides, he believed there was a special future for the place he chose. The accompanying story would indicate he is right.

units from Buehler being in carload and truckload lots.

A fuel storage of from 8000 to 10,000 gallons is maintained to service customers' needs. Mr. Lowen's business policy is to "sell the customer a good, sound piece of equipment and check its performance regularly. This is good business. It promotes safety, economy, and also results in a happy, satisfied customer," and it has worked out just that way at the new Shangri-La on the Mojave.

New Provisions in California Law Affecting Filling Stations

New provisions in the California state law affecting the distribution of LP-Gas at automotive filling stations have been published.

Under Article 3a, "Motor Fuel Pump License Tags," occurs the following extracts from the "Business and Professions Code" pertaining to weights and measures of petroleum products:

"20766. On and after July 1, 1948, it is unlawful to sell at retail gasoline, liquefied petroleum gas, diesel fuel, distillate or other petroleum products for use as fuel for internal combustion engines from any motor fuel pump or other dispensing device which does not bear a motor fuel pump license tag issued by the department.

"20767. Applications for motor fuel pump license tags shall be filed with the department by the owner or operator of each such pump or dispensing device on a form prescribed and furnished by the department. The application shall be accompanied by a license fee of one dollar and fifty cents for each tag. Applications for renewal of motor fuel pump license tags for each fiscal year beginning July 1 shall be made on or before the last day of June next preceding.

"20768. Each motor fuel pump license tag issued by the department shall expire at midnight of June 30 of the fiscal year stated thereon. When securely attached to a motor fuel pump or other dispensing device in such manner as to be plainly visible, such tag shall serve as evidence that the prescribed license fee has been paid to the expiration of the indicated fiscal year, and no additional fee shall be required during said period because of a change in ownership or location of such pump or other dispensing device.

"Article 3 of Chapter 7 of Division 8 of said code, which is superseded by Article 3a, is repealed, effective at midnight June 30, 1948.

"20820. No person shall sell, offer for sale, or advertise for sale, any gasoline or other motor vehicle fuel from any place of business in this State by use of or through or from any dispensing apparatus, unless there is displayed on such dispensing apparatus in a conspicuous place at least one sign showing the actual total price, including taxes, per gallon of all gasoline or other motor vehicle fuel sold, offered for sale, or advertised for sale therefrom."

General Motors Installs Bulk Tank in Buffalo, N. Y.

General Motors Corp. has been granted a building permit to erect a propane gas tank at its plant, 56 Clyde St., Buffalo, N. Y.,

The estimated cost is $10,000.

Heating Comfort On a Mountain Top

AT AN elevation of nearly a mile and a half in the Colorado mountains where, in winter, the wind blows cold and the snow piles high, is an unique business undertaking that depends entirely upon LP-Gas for heating.

The resort is known as "The Tepees." It is located 18 miles west of downtown Denver on U. S. highway No. 40, and is comprised of a dining room, cocktail lounge, souvenir and gift shop, and a 64-foot bar, said to be the longest in the state. Each "tepee" has four floors, 50 feet high, and the overall length of the building is 142 feet.

The weather gets frigid on stormy days 7292 feet in the air in Colorado, but the heating problem at the "Tepees" has been solved by the owner in the use of suspended gas heaters. These heaters are Reznor built and the story of their operation comes from Elmo Hall, Denver representative of the Reznor Manufacturing Co., Mercer, Pa.

The curio shop and cocktail lounge are each heated by an "US 150" Reznor. Due to the slope of the walls, the heaters are located just below the 8-foot ceiling and recessed 24-inches back of the interior wall at this height. A vertical duct connects to a C.A. grille located at the floor level, while louvers normally on the front of the heater were removed and placed flush with the wall in the outlet end of the 24-inch duct.

The dining room is heated by two "US 200" heaters located in the rear corners with heat directed at the large front glass exposure through which, by the way, you can see 40 miles of Colorado's highest peaks. The dance hall on the second floor is heated by two "US 110" units, located in the rear center above the open stairway from the dining room.

Above the curio shop on the second floor is a five-room apartment heated by two floor heaters, while above the cocktail lounge is a smaller circular bar and lounge used for private parties and also heated by a floor heater.

All units are thermostatically controlled and are left on pilot the year round, since summer night temperatures down to 55° are frequent at this elevation. LP-Gas is supplied to all units from three 1000-gallon tanks located in the rear, and installed by the Red Dot LP-Gas Co. of Denver.

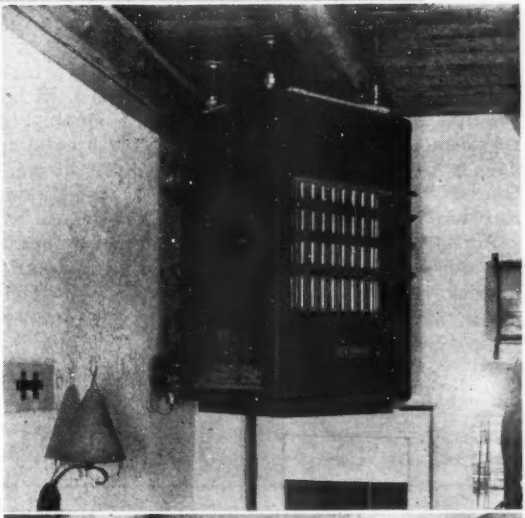
The sun effect on this type of architectural design is greater than on vertical walls, and the year of operation just concluded has demonstrated to the satisfaction of the Tepee's manager, Eddie Ott, the advantage and flexibility of individually located and controlled units, supplying heat only when and where required.

J. E. Walling, Jr., Purchases Haskell (Texas) Butane Co.

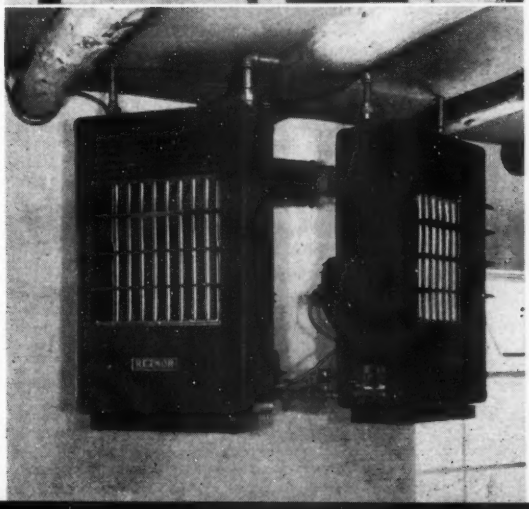
The Haskell Butane Co., Haskell, Texas, has been purchased by J. E. Walling, Jr. The transaction included the entire stock, trucks, buildings and location of the company formerly owned by Carl Wheatly and Paul Roberts.

Mr. Walling, already owner of the Walling Butane Appliance Co., plans to consolidate the two companies and will continue to operate as the Walling Butane Appliance Co.

ABOVE: "The Tepees," Colorado mountain restaurant which uses LP-Gas for heat.



RIGHT: Suspended heater in the dining room.



RIGHT: These two Reznor suspended heaters serve the dance hall.

Domestic Load Demand 52.1% Of All LP-Gas Sales in 1947

AN increase by a third in domestic sales of liquefied petroleum gases realized in 1946 was repeated in 1947 when deliveries of 2,209,797,000 gallons were 30% above a revised total of 1,704,262,000 for 1946, according to a survey made by the Petroleum Economics Branch, Bureau of Mines, United States Department of the Interior.

Added supplies of liquefied petroleum gases from petroleum refineries, natural gasoline and cycle plants, as well as additional equipment for the transportation, storage and use, made possible another big expansion in sales of this fuel in 1947.

Records compiled by the Bureau of the Census, United States Department of Commerce show exports of 53,233,000 gallons of liquefied petroleum gases in 1947 compared with 49,091,000 in 1946—a nominal gain of 8% compared with outstanding increases of 88% in 1946 and 79% in 1945. Tables 1 and 2 reveal detailed figures.

Quantities of liquefied petroleum gases reported for domestic fuel, gas manufacturing, and chemical raw material showed important gains in 1947 over 1946, while only moderate increases were indicated for industrial use and internal combustion-engine fuel. A smaller quantity was sold for synthetic

TABLE I. SALES OF LIQUEFIED PETROLEUM GASES IN THE UNITED STATES, 1942-1947
(Thousands of Gallons)

Year	Butane	Propane	Butane-Propane mixtures	Pentane	Quantity	Total % inc. over previous yr.
1942.....	128,560	150,511	301,917	4,452	585,440	26.5
1943.....	140,122	218,273	312,683	4,155	675,233	15.3
1944[1].....	122,870	324,355	450,846	(5)	898,071	33.0
1944[2].....	273,116	335,884	451,156	(5)	1,060,156	...
1945.....	325,140	444,581	507,045	(5)	1,276,766	20.4
1946[3].....	441,418	551,250	711,594	(5)	1,704,262	33.5
1947[4].....	398,635	863,686	947,476	(5)	2,209,797	29.7

1) Without synthetic rubber components for comparison with 1943. 2) Includes material delivered for synthetic rubber components. 3) Revised. 4) Subject to revision. 5) Not available.

rubber components in 1947 than in 1946.

Liquefied petroleum gases delivered for domestic consumption totaled 1,150,538,000 gallons in 1947, a quantity more than 50% above the 1946 total of 758,466,000 gallons. The remarkable growth in the demand for these gases for household consumption is evident when it is noticed that the total sold for this particular use in 1947 was above that delivered for all purposes as recently as 1944. It can be added also that the proportion of this fuel sold for domestic use has risen from 42% of all requirements in 1945 to 45% in 1946 and then to 52% of total sales in 1947.

Utility Use Doubled in 1947

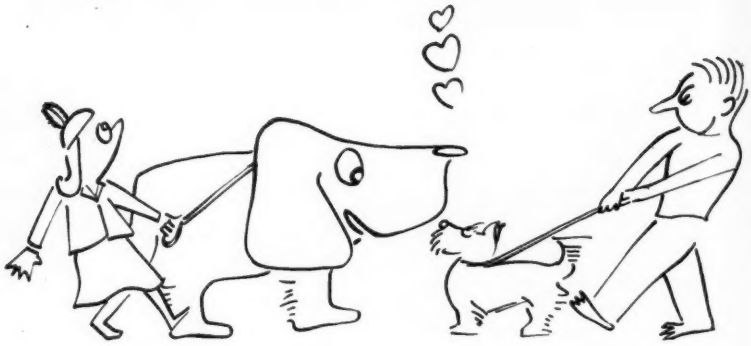
Liquefied petroleum gases delivered to manufactured gas companies for enriching manufactured gas, for direct distribution through mains, and for stand-by purposes has mounted sharply in recent years. The 1947 quantity of 169,332,000 gallons delivered for these purposes was nearly double 1946 requirements of 86,660,000 which in turn was over 60% above the 1945 total. The proportion going to manufactured gas companies has increased from 4% of all sales in 1944 and 1945 to 5% in 1946 and to nearly 8% in 1947.

The use of liquefied petroleum gases as fuel by industrial plants has not expanded at the high rates noted for some of the other demands because of the lack of adequate equipment for distribution and use, and also because of competitive market requirements. Sales intended for industrial fuel increased from 159,115,000 gallons in 1946 to 173,601,000 in 1947—a gain of 9% in contrast to a slight decline in volume for 1946.

100,000,000 Gals. for Engine Fuel

It can be added that the industrial fuel item represented about 9% of total sales in 1946 and 8% in 1947. Liquefied petroleum gases sold for internal combustion engine fuel rose by 6% in 1947 in contrast to gains of about 1% for both 1945 and 1946. The quantities reported for engine fuel were 99,786,000 gallons in 1947 compared with 94,592,000 in 1946 and these totals accounted for about 5% of the market in both years!

The proportionate share of butane in total sales of liquefied petroleum gases dropped noticeably in 1947, while that for propane rose almost correspondingly, as available supplies of the latter increased and as more high-pressure equipment for handling, storing, and using propane came on the market. The relative amount of butane-propane mixtures in total sales also gained slightly. Butane has satisfied about 26% of the demand in recent years; however, in 1947, with over a third less going to synthetic rubber and chemical plants for raw material and with larger quantities diverted for the manufacture of motor fuel, the butane share in sales dropped to 18% of the total. Quantitatively, deliveries of butane declined from 441,418,000 gallons in 1946 to 398,-

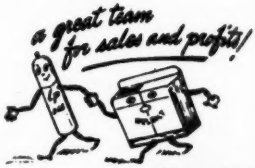


The Bigger They Come...

It's not always the biggest fellows that make a hit with the ladies, so if your biggest, fanciest L.P. gas ranges aren't selling well, don't blame it on the weather, your salesmen, unfair competition or your mother-in-law. These high-priced gas ranges may be the latest thing in home economics but 'way behind in practical dollar economics.

Today's consumer goods must be designed not only for beauty and efficiency . . . what the consumer can afford to buy is equally important.

Keep your best foot forward . . . feature Welbilt L. P. Equi-Thermal Gas Ranges and offer your customers the latest features and design, all at a popular price. It's the range the middle millions choose because it's priced within their reach.



WELBILT STOVE CO., INC.,
Maspeth, L. I., N. Y.

MORE Welbilt Ranges ARE BEING DELIVERED NOW!

TABLE 2. SALES[1] OF LIQUEFIED PETROLEUM GASES BY USES AND REGIONAL DISTRIBUTION, 1946-47

(Thousands of Gallons)

	Total	Total—All Sales % Total	Total	% Total
		1947[2]		*1946*[3]
Domestic	1,150,538	52.1	758,466	44.5
Pacific Coast area	144,626	6.6	110,343	6.5
All other areas	1,005,912	45.5	648,123	38.0
Gas manufacturing	169.332	7.7	86,660	5.1
Pacific Coast area	26,099	1.2	19,594	1.2
All other areas	143,233	6.5	67,066	3.9
Industrial fuel	173,601	7.8	159.115	9.3
Pacific Coast area	20,284	0.9	20,208	1.2
All other areas	153,317	6.9	138,907	8.1
Synthetic rubber components	201.535	9.1	293.892	17.3
Pacific Coast area	20,833	0.9	22,911	1.3
All other areas	180,702	8.2	270,981	16.0
Chemical manufacturing	414,267	18.8	311,499	18.3
Pacific Coast area	40,319	1.8	24,372	1.4
All other areas	373,948	17.0	287,127	16.9
Internal combustion eng. fuel	99,786	4.5	94,592	5.5
Pacific Coast area	41,441	1.9	39,669	2.3
All other areas	58,345	2.6	54,923	3.2
All other uses	738	....	38	....
Pacific Coast area	637	....	20	....
All other areas	101	....	18	....
Total sales	2,209,797	100.0	1,704,262	100.0
Pacific Coast area	294,239	13.3	237,117	13.9
All other areas	1,915,558	86.7	1,467,145	86.1
Percent of total sales	100.0	....	100.0	....

[1] In continental United States only. [2] Subject to revision. [3] Revised.

635,000 in 1947—a shrinkage of about 10%.

There was a pronounced turn to propane for fuel and chemical raw material in 1947 with the result that sales mounted from 551,250,000 gallons in 1946 to 863,686,000 in 1947—a gain of 57%. Viewed in another way, the proportionate share for propane in total deliveries increased from 32% in 1946 to 39% in 1947.

There was also an active demand for butane-propane mixtures in 1947 when sales of 947,476,000 gallons were 33% over the 1946 total of 711,594,000 gallons. It can be added that the market share for butane-propane mixtures increased from 42% in 1946 to 43% in 1947.

Pertinent data regarding the distribution of liquefied petroleum gases by manufactured gas companies and credited to the American Gas Association are as follows:

"Liquefied petroleum gas, as of July 1, 1948, was delivered through mains to 301-650 consumers in 419 communities by 188 companies in 39 states.

"Butane-air gas and propane-air with heating value ranging from 525 to 1,600 Btu per cu. ft. was supplied 336 communities in 37 states.

"A mixture of undiluted butane and propane gas with heating value of 2,800 to 3,550 Btu per cu. ft. was supplied 22 communities in Arizona, California, Nevada, New Jersey and New Mexico.

"Undiluted propane gas with heating value of 2,515 to 2,550 Btu per cu. ft. was supplied 61 communities in Iowa, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Mexico, North Carolina, North Dakota, Virginia, and Wisconsin."

E. T. Knudsen of the Los Angeles office of the Bureau of Mines is credited with the statistics covering sales of liquefied petroleum gases in the Pacific Coast marketing area of California, Oregon, Washington, Arizona, and Nevada. (See Butane-Propane *News*, Aug. 1948, Page55). Deliveries of liquefied petroleum gases in these states increased from a revised total of 237,117,000 gallons in 1946 to 294,239,000 in 1947—a gain of 24%. The totals for the Pacific Coast represented about 14% of the national demand in 1946 and 13% in 1947. The market for liquefied petroleum gases in other areas of the country rose from a revised total of 1,467,145,000 gallons in 1946 to 1,915,558,000 in 1947—an expansion of over 30% in volume.

Average monthly refinery prices for commercial grades of liquefied petroleum gases varied from 3.93 cents per gallon at New Orleans to 6.59 at Baltimore—an overall average (exclusive of the Pacific Coast) of 5.935 cents.

Records That Pay Off

BY J. M. LANIGAN

THESE are times when a man in business dares not make a move until he has all of the facts about his operations before him. Your LP-Gas business is not an exception. To be a good manager — to make the right decisions, you must have facts. They must be *current* facts — not 30 or 60 days old. Your judgment in business can be only as good as the information you have.

To do a top level management job in your business, you need to know at all times just where you stand. You must be absolutely sure of:

—what you own
—what you owe
—what is your net worth

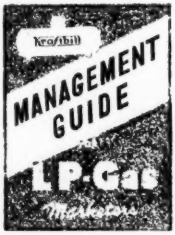
How long must you wait for your monthly financial statement? Can you get it on short notice for any period, even less than a month, if needed? How really helpful is that statement after you get it? Do you have to pass up opportunities because you are afraid to trust the information received so late? What about your balance sheet? Does it reflect your true financial status? By keeping a careful record of all transactions you gather the real management facts you must have. Such a procedure enables the dealer to know which practices yield profits and permit him to discontinue those that register losses.

Records that contribute the facts shown on the profit and loss statement can be very illuminating and helpful in stopping leaks and losses. For example, delivery expense is a booby trap unless an accurate account of delivery cost is kept. To eliminate loss on deliveries you might find it necessary to shorten routes and set up a planned customer delivery system. Keeping a strict account of all transactions is the safest way to avoid bankruptcy. Department of Commerce surveys show that approximately 80% of all

business failures are among those who did not keep accurate records of their transactions and operations.

Now suppose that you could have within two or three days, or less, after the closing in any period all of the facts essential for profitable management in your LP-Gas business. Wouldn't you know that you could then do a real management job in your business? What would such a financial report be worth to you?

You can have that kind of statement. You can get that kind of fast, reliable information now. And you can get it from your own staff without adding a single hour to your payroll. The way to get it is to enlist the aid of an exceptionally fine manual which is now available, and which will guide you simply and surely in setting up and maintaining an adequate record-keeping system to improve your management ability. The guide can be recommended for you as an LP-Gas marketer because it is custom-built for the industry. How it came into existence is a story of months of research, surveys, conferences and considerable expense.



Many industries have spent thousands of dollars and years of time in developing procedures which standardize the recording of information relating solely to their industry. The value of the developments is recognized in the industries fortunate enough to have them.

The liquefied petroleum gas industry is young and made up of business men who recognize the value of this type of record-keeping. For several years they have been striving toward such a goal for their own industry. The task has been tremendous and has required the cooperation of many leaders in the industry working cooperatively with their state and national associations.

In the process of achieving that goal, a nationwide survey was made by the Ross-Martin Co.,* Tulsa, Okla., in cooperation with these associations. This firm is equipped with a staff of experts, experienced in seeking out and studying the needs of an industry from a record-keeping point of view. Some of the results of the survey have been widely publicized in the LP-Gas industry and many helpful forms have been standardized and offered to the industry.

Study and Research Required

The bigger job of setting up accounts and presenting procedures for the recording of transactions and reporting of results has taken more study and research. The Ross-Martin Co. assigned an able management engineer to this task and he recently has completed the project. The result has been com-

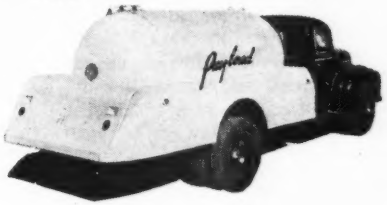
* Address: 423 E. Fourth St.

WHEN YOU DELIVER LP-GAS

in a Payload **DELIVERY TRUCK TANK**

YOUR CUSTOMERS ARE ASSURED OF A CONTINUOUS AND REGULAR SERVICE

SCHEDULED MONTHLY GAS DELIVERY TO CUSTOMER SYSTEMS ON ALL ROADS ARE MADE WITH THE GREATEST EFFICIENCY, ECONOMY OF OPERATION AND MAINTENANCE



YOU BUILD UP CUSTOMER GAS AND APPLIANCE SALES through your Regular LP-Gas Delivery

Payload Truck Tanks are completely fitted -- Ready for mounting
LIGHTER WEIGHT — STRONGER BODY — Low Cost Operation.

TWIN TANK
MODEL STT

HAULS 2 OR MORE MIXTURES OF LP-GAS ON ONE LOAD!

Write for schedule of prices

SOUTHLAND STEEL CO., INC.

5219 MAPLE AVE. DALLAS, TEXAS

piled into a manual which is called the "Kraftbilt Management Guide for LP-Gas Marketers."

The purpose of this "Guide" is to direct the LP-Gas dealer in establishing accounts and records which will provide a systematic method for recording all business transactions. Beyond that invaluable service, the guide remains within your reach as long as you remain in business, always ready for quick and easy reference when questions arise or you find the need for an authoritative answer to the question of handling a new or unusual transaction. The "Guide" shows how to handle any and all transactions. It illustrates forms that will provide the necessary facts you need and gives step-by-step instructions on how to use the forms to get the answers to such questions as:

How much cash do I have on hand and in the bank?

What is the gross margin on each item sold?

How much is my total delivery expense?

How much business am I doing?

What is the amount of my cash and charge sales?

How much money do I owe suppliers and others?

What percentage of net sales does my total expense absorb?

How much money will be required to meet all my taxes?

The most helpful records are those which are worked into a pattern or system which classifies business transactions — arranges them in intelligent and practical combinations, and presents the result in a manner which uncovers profitable operations as well as unsatisfactory conditions. The forms and steps offered in the "Guide" are designed to accomplish this economically and easily.

For quick reference requirements, the "Management Guide" is divided into the following five parts:

1. Classification of Accounts—Showing list of accounts by which transactions are to be classified. They represent those accounts which will ordinarily be required for recording transactions, and for obtaining information essential to a distributor or dealer in managing an LP-Gas business. The size of the business will to a great extent determine the number of accounts to be used.

2. Explanation of Accounts—Showing the kind of transactions to be included in each account. As there may be a variety of items which may be charged or credited to any one account, an explanation, showing the nature of the items with which each account may be charged or credited, is made with respect to each account.

3. List of Forms—Showing purpose and instructions for use of each form. List of forms is given. Each form is illustrated and an explanation shows how it is to be used.

4. Closing the Accounts—Showing entries necessary before monthly and annual closings are made.

5. Financial Statement — Showing how to prepare a balance sheet and profit or loss statement in a manner which makes possible a ready analysis of the business as well as furnishing information in accepted form. Auxiliary records are shown which aid in classifying and presenting facts in more detail than is possible

to present through the General Ledger accounts.

The "Guide" has been written so that instructions can be easily followed. Anyone with some knowledge of bookkeeping or accounting, or some experience in management can take it and achieve greater success in the LP-Gas business. It shows how to gather information at the source, and gives actual illustrations of the forms required to supply that information in the quickest, easiest and most economical manner. It provides easy-to-follow instructions on how to fill in these forms in order to utilize their full value; how to transfer the information to the books of final entry; how to close the accounts at any given period of time to present a profit and loss statement and balance sheet.

It shows how to use the amounts of each account for comparative purposes on the profit and loss statement and how to properly set out all of the accounts on the balance sheet to show the actual and exact picture of the business as of a given date.

Contrary to what might be expected from such a comprehensive system, the "Guide" provides for a really simple method of accounting. Using only a general ledger, a cash journal and such auxiliary records as information records, it, obviously, is so simple that in most cases it will actually eliminate much work now being done. At the same time it will provide all the information necessary to prove that you are "running" your business at a profit great enough to permit its orderly and sound growth.

Dan Perkins With California Bureau Weights and Measures

Dan Perkins, widely known throughout the LP-Gas industry on the West Coast, has joined the staff of the California State Department of Agriculture, Bureau of Weights and Measures. He will serve in this department as a technician for liquefied petroleum gas.

Mr. Perkins will serve under Jim Brenton, chief of the Bureau of Weights and Measures, with headquarters in Sacramento.

In his work for the division, Mr. Perkins will contact LP-Gas dealers and distributors throughout the state. Much of his work will be done in cooperation with county sealers who are in charge of checking the meters and dispensing equipment in their respective areas.

Mr. Perkins has been associated with the LP-Gas industry in the West for many years. Most of this time was spent in the employment of the Ransome Co., of Emeryville, Calif., where he took part in many phases of their sales and installation work. During the war he served with the Navy.

Use of Unfired Pressure Vessels In LP-Gas Industry

By E. O. MATTOCKS
Phillips Petroleum Co., Bartlesville, Okla.

Part 4—Conclusion

The areas computed by Fetterly's formula are actually the effective relieving area and not the actual area of the safety valve. The use of the effective area resulted in considerable confusion since this cannot be determined, generally, except by actual flow tests. After a study by the National Fire Protection Association, they converted the areas into actual flow requirements for the various size containers and for various pressures.

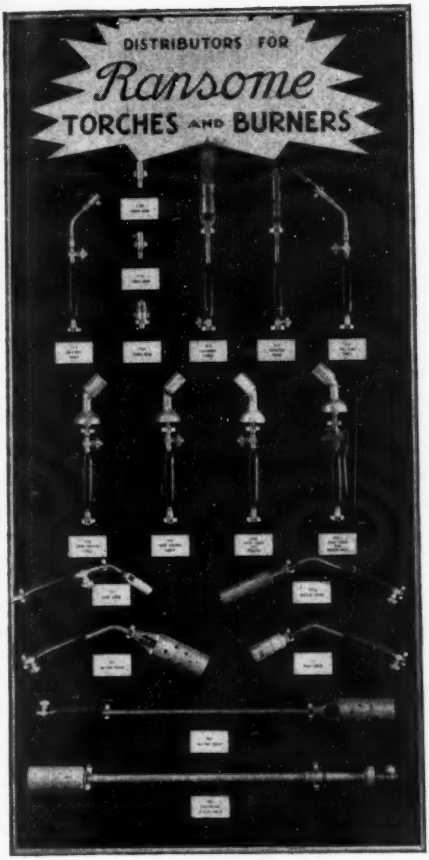
The new flow requirements are shown in Table 6. The flows were calculated for propane which requires the largest area of all the liquefied petroleum gases. Allowance for deviations from ideal gas laws as well as variations in the specific heat ratios for varying pressure and temperature conditions were made.

It was further assumed that the coefficient of discharge was unity. Therefore, the flows shown are the quantities required to be discharged by a given relieving device regardless of its construction or actual measured area.

The Underwriters' Laboratories Inc., are flow testing relief devices and determining their capacity in accordance with the requirements set forth in the National Fire Protection Association LP-Gas code. They have listed a number of valves which have been flow tested. The rating is determined at 120% of the maximum permitted start-to-discharge pressure. The Underwriters' Laboratories tests are made on production valves and have to be repeated yearly on current production to insure that the valves have at least the flow capacity originally determined. Each model, size, and spring is flow tested.

The American Petroleum Institute (API) has been studying the operation and requirements of pressure relieving devices for some time. An investigation conducted by the Department of Engineering Research at the University of Michigan for the API Sub-Committee on Pressure Relieving Systems indicated a wide variation in opinions as to quantity of heat input which should be used in computing the required safety valve area. Some of the petroleum companies interviewed were using Fetterly's formula as the basis of their calculation.

Table 7 shows a comparison be-



New TORCH *Display Board* FOR RANSOME DEALERS

Available for Price of Torches Only

RANSOME COMPANY

Designing and Constructing Engineers

4030 HOLLIS STREET EMERYVILLE, CALIFORNIA

Ransome

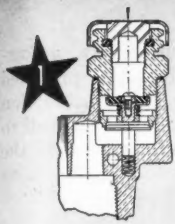
TABLE 6

MINIMUM REQUIRED RATE OF DISCHARGE (a) IN CUBIC FEET PER MINUTE OF L. P. Gas AND EQUIVALENT AIR FOR SAFETY RELIEF VALVES TO BE USED ON CONTAINERS OTHER THAN THOSE CONSTRUCTED IN ACCORDANCE WITH INTERSTATE COMMERCE COMMISSION SPECIFICATION
DISCHARGE MEASURED AT 60°F. AND ATMOSPHERIC PRESSURE (14.7 ABSOLUTE).

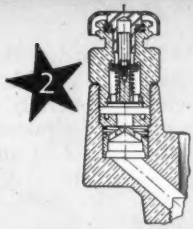
D X U (c)	CONTAINER TYPE (b)											
	80		100		125		150		175		200	
	L.P.Gas	Air	L.P.Gas	Air	L.P.Gas	Air	L.P.Gas	Air	L.P.Gas	Air	L.P.Gas	Air
Not over 10	680	813	695	817	720	828	745	832	775	838	825	837
Over 10 but not over 15	1020	1218	1045	1228	1075	1235	1110	1240	1155	1243	1250	1268
" 15 " " " 20	1360	1625	1390	1634	1430	1643	1475	1648	1540	1665	1660	1664
" 20 " " " 30	2040	2438	2085	2450	2145	2465	2215	2475	2300	2485	2460	2495
" 30 " " " 40	2725	3255	2775	3260	2840	3260	2930	3275	3050	3290	3250	3297
" 40 " " " 50	3410	4075	3465	4080	3550	4085	3660	4090	3810	4115	4050	4110
" 50 " " " 60	4090	4895	4160	4890	4250	4885	4365	4885	4530	4890	4830	4900
" 60 " " " 70	4770	5700	4850	5700	4960	5700	5100	5700	5300	5720	5610	5690
" 70 " " " 80	5450	6520	5530	6510	5650	6500	5815	6500	6020	6500	6370	6450
" 80 " " " 100	6800	8130	6910	8120	7060	8120	7290	8050	7480	8090	7960	8080
" 100 " " " 120	8200	9800	8300	9760	8450	9715	8680	9700	8970	9700	9500	9640
" 120 " " " 140	9550	11400	9675	11370	9860	11340	10100	11300	10450	11290	11020	11180
" 140 " " " 160	10900	13025	11050	12990	11260	12940	11550	12900	11920	12880	12500	12680
" 160 " " " 180	12270	14660	12420	14600	12660	14550	12970	14500	13400	14480	13900	14100
" 180 " " " 200	12810	15300	12950	15220	13200	15170	13530	15110	13970	15100	14480	14690
" 200 " " " 220	13440	16080	13500	15870	13740	15790	14090	15740	14540	15720	15070	15290
" 220 " " " 240	13880	16580	14040	16500	14290	16430	14640	16350	15100	16330	15650	15870
" 240 " " " 260	14420	17230	14580	17140	14840	17050	15200	16970	15670	16930	16240	16480
" 260 " " " 280	14960	17875	15110	17760	15390	17700	15750	17600	16240	17560	16820	17060
" 280 " " " 300	15490	18510	15650	18400	15930	18300	16300	18210	16800	18160	17400	17650
" 300 " " " 320	16020	19130	16190	19040	16470	18930	16850	18820	17460	18870	17990	18250
" 320 " " " 340	16540	19770	16720	19660	17000	19540	17400	19449	17920	19380	18560	18840
" 340 " " " 360	17080	20420	17250	20280	17550	20170	17950	20060	18490	19980	19150	19440
" 360 " " " 380	17610	21040	17800	20940	18100	20800	18500	20660	19040	20580	19730	20000
" 380 " " " 400	18140	21680	18300	21500	18640	21420	19050	21280	19600	21180	20300	20600
" 400 " " " 420	18690	22340	18860	22170	19200	22080	19610	21900	20180	21800	20900	21200
" 420 " " " 440	19210	22950	19400	22800	19740	22680	20170	22530	20740	22420	21470	21780
" 440 " " " 460	19740	23600	19940	23450	20300	23340	20730	23160	21300	23030	22050	22380
" 460 " " " 480	20290	24250	20480	24080	20840	23950	21280	23770	21860	23640	22640	23000
" 480 " " " 500	20820	24890	21010	24700	21390	24600	21820	24370	22400	24240	23210	23550
" 500 " " " 520	21350	25500	21550	25340	21930	25200	22390	25000	22990	24860	23790	24150
" 520 " " " 540	21880	26150	22090	25970	22480	25840	22930	25620	23560	25460	24380	24740
" 540 " " " 560	22400	26760	22620	26600	23030	26470	23490	26240	24130	26100	24960	25330
" 560 " " " 580	22940	27430	23170	27240	23580	27100	24040	26850	24690	26700	25540	25930
" 580 " " " 600	23470	28050	23710	27870	24120	27720	24600	27490	25250	27300	26120	26500
" 600 " " " 620	24000	28680	24250	28500	24650	28340	25150	28100	25800	27900	26700	27100

For D X U Over 620, Discharge Capacity to be Calculated in Direct Proportion to Preceding Values.

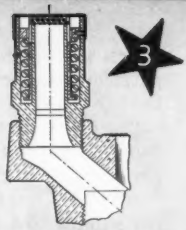
Note: (a) Rates of Discharge Determined in Accordance with Section B.9 (b) and (c).
(b) See Sections 2.1 and 3.1 for Container Type.
For Underground Containers See Section 2.2 (b).
(c) D — outside diameter of container in feet and fractions thereof.
U — overall length of container in feet and fractions thereof.
For spherical containers use D_2 instead of D U.



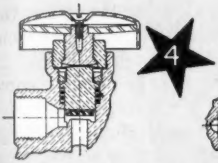
Quick Filler and Evacuating Valve—3-way action provides: (1) quick connection to filler hose, (2) safety check valve to prevent back pressure—permits seat inspection or filler valve replacement without removal, (3) safe, easy liquid withdrawal.



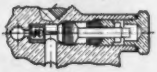
Vapor Return Valve—with excess flow check valve—Equalizes pressure between storage and supply tanks. Automatic shutoff when hose is disconnected. Excess flow check valve prevents accidental discharge.



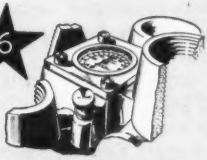
Safety Relief Valve—New, smaller Weatherhead Relief Valves give *double* the flow. Heads can be supplied with Relief Valves to provide capacities from 2000 to 5750 C.F.M. Meet new N.B.F.U. Pamphlet 58 requirements.



Shutoff Valve—Master valve with metal diaphragm for positive shutoff of fuel supply to service outlet. Equipped with back-seat for easy servicing.



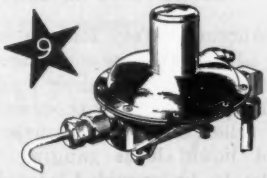
Selector Valve—Vapor or Liquid—When Unit-Head is attached to a withdrawal tube, the Selector Valve permits either liquid or vapor withdrawal without changing or dismantling the head.



Liquid Level Gauge—Weatherhead Unit-Heads are machined for float or slip tube gauge, and are supplied with or without fixed liquid level gauge.

Pressure Gauge—Weatherhead Unit-Heads are machined to take a pressure gauge, which may be ordered as optional equipment. Gauge provided has a capacity to 300 P.S.I.

Rugged Forged Body—Precision machined, forged brass body prevents leakage. Tapped with 2½" N.P.T.F. Dryseal taper thread for accurate fit to riser pipe.



Regulators—Two sizes (for Butane or Propane) are furnished with Weatherhead Unit-Head. One for small installations, another for large installations.

Look Ahead with

THE Weatherhead CO.

CLEVELAND 8, OHIO

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tween several formulas used in the petroleum industry. It will be noted that Fetterly's formula, which is based on the total area of the container and not the wetted area, gives a very high rate of heat input figure. The top figure of 22,000 Btu per square foot of maximum wetted surface per hour, corresponding to a specified method of determining the maximum wetted surface, was used by one petroleum company. Rubber Reserve and other companies were using 20,000 Btu per square foot per hour per square foot of wetted surface while some used total surface area.

From these data it is seen that compared with other formulas, the use of Fetterly's formula produces a high heat input figure which should require a safety valve capacity well on the safe side. However, the correctness of any formula for determining safety valve area has not been completely established.

Excess Flows for Safety

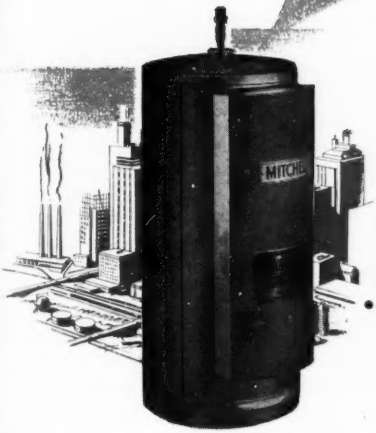
Another safety feature installed on LP-Gas storage containers is excess flow valves or their equivalent. All openings except those connected to relief devices, pressure gauges and liquid level gauging devices have to be provided according to NBFU Code on LP-Gas with some kind of automatic safety shut-off device which will operate in case the line is ruptured.

An excess flow valve is a device installed in a line inside or outside of the container; if outside it must be installed so that any undue strain applied to the valve will not cause the valve to rupture so as to render it inoperative. To accomplish this the valves are provided generally with an undercut section or weakness ring which will fail in case of undue strain applied to the valve without rendering the valve inoperative.

Potential Hazards Eliminated

The size of the excess flow valve is such that a slug will close when the flow past it exceeds a predetermined amount which is more than normal but somewhat less than the total capacity of the line and connecting system attached to it. In this way if a line is broken some distance from the excess flow valve the flow would be sufficiently large to close the excess flow valve, thus reducing the amount of material lost to practically the quantity in the line between the excess flow valve and the break. These valves have proved very worth while and have stopped the escape of the container contents, thus eliminating a serious potential hazard.

As previously pointed out the coefficient of expansion of liquefied petroleum gas is relatively large and it is necessary, therefore, to provide sufficient vapor space when filling an LP-Gas container to permit the liquid to expand in case it is heated. The ICC has maintained for a great number of years in its regulations a requirement that the liquid portion must not completely fill the cylinder or drum at 130 F. With this fundamental established, the filling limit or filling density has been developed for each particular commodity. Filling density as used in the ICC regulations is



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write for descriptive literature

E. O. Mattocks is a graduate of Cornell University with a degree in mechanical engineering. After graduating in 1926, he worked for the Syracuse Lighting Co. (now the Central New York Power Corp.). In 1931 he joined the American Gas Association Testing Laboratories in Cleveland, as an industrial engineer. Six years later, in 1937, he became affiliated with Phillips Petroleum Co. as a designer of industrial installations using liquefied petroleum gas.

E. O. MATTOCKS

Today he is technical representative of Chemical Products and Chemical Engineering Departments of Phillips.—Editor.

defined as the per cent ratio of the weight of product in a container to the weight of water at 60 F that the container will hold.

Early in its history the coefficient of expansion of liquefied petroleum gas was not too well established. The filling densities originally developed by the Bureau of Explosives and still in use for cylinders and containers under ICC jurisdiction are such that a cylinder filled with pure propane will become liquid full at approximately 145 F and a cylinder filled with pure normal butane will become liquid full at approximately 164 F.

Although the filling densities were originally for use with cylinders containing 300 pounds or less of liquefied petroleum gas, they have been applied to large containers. As previously pointed out, the contents of large tanks will not be heated by the atmosphere to as high a temperature as the contents in small cylinders. While it is recognized that small containers, such as ICC cylinders, may be heated together with their contents to a temperature of 130 F, no evidence is available to indicate that large unfired pressure vessels will ever reach this temperature.

After an extensive study of the maximum possible liquid temperatures of liquefied petroleum gas which may be loaded into an unfired pressure vessel or the maximum liquid temperature which may result from atmospheric heating, the Liquefied Petroleum Gas Association recommended that filling densities for large containers be increased. Acting on this recommendation, the National Fire Protection Association adopted new filling densities for containers having a water capacity of 1200 gallons or more. These new filling densities are three whole numbers higher than those established for ICC cylinders.

The new filling densities are such that a container loaded according to them with pure propane will be liquid full at a temperature of 121 F and a container loaded with pure normal butane will be liquid full at a temperature of 126 F. It is readily seen that an ample margin of safety still exists between these temperatures and the maximum liquid temperature expected to be encountered as a result of atmospheric heating. Table 8 shows the filling densities for various specific gravities together

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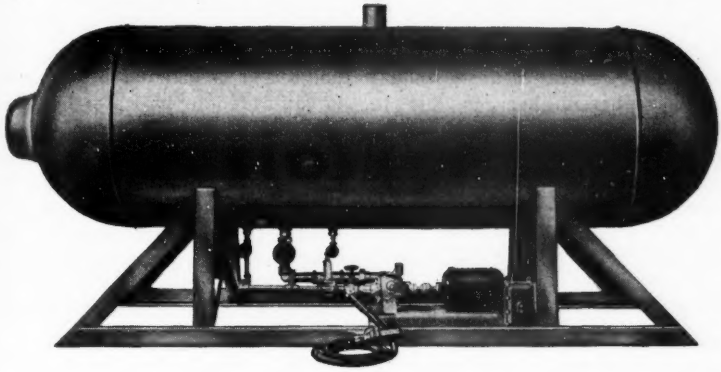

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with the maximum volume per cent of LP-Gas at 60 F which may be placed into a container.

The liquid content of an unfired pressure vessel is determined by any one of several means. Because of the inherent hazards due to breakage, gauge glasses generally are not used. The most common gauging means are either of the float type or the change-of-state type.

Several types of float gauges are used. The most common type has the float connected solidly at the end of a rod, the other end of which is pivoted in the center of the tank. Rotation of the float about this pivot is transmitted through a gear mechanism to rotate a magnet located at the tank shell. The magnet is placed against a diaphragm on the outside of which is attached an iron pointer. This pointer is pivoted on a dial which is calibrated to indicate the liquid contents. Generally, on the dial is included also markings indicating the maximum level to which the container may be filled for varying liquid temperatures and specific gravities. The dial is installed in the center of the tank end, on top the tank, or on the side midway between the top and bottom.

The change-of-state gauge is found generally in the rotary gauge and the slip tube gauge. The rotary

TABLE 7

A COMPARISON OF THE HEAT INPUT VALUES

Example Vessel: Reflux Drum 21 in Figure 3

Vessel Specifications

Dimension - 8 ft. x 12 ft.
Shell thickness - 0.5 in.
Design Pressure - 75 p.s.i.g.
Relief valve set pressure
75 p.s.i.g.
Allowable pressure for capacity relief
97.2 p.s.i.a.
Total surface area - 402 sq.ft.
Uninsulated

Operating Conditions

Fluid in vessel - n-Butane
Latent heat - 137 B.T.U./lb.
at 97.2 p.s.i.a.
Saturated temperature - 143°F.
at 97.2 p.s.i.a.
Normal liquid level - 1/2 full
Wetted shell area - 251 sq.ft.

Formula	Surface Area Sq.Ft.	Total Heat Input B.T.U./hr.
A. P.A.W.	251	1,500,000
B. 20-22,000 B.T.U./hr./sq.ft.	385	8,470,000
	251	5,020,000
C. Stroop-Maker	251	1,910,000
	402	3,600,000
D. Fetterly	402	6,260,000
E. State of California L.P.G. Safety Orders	402	5,060,000
F. Handbook Butane-Propane Gases - Footnote p. 40	402	5,500,000
G. 1.5 P.A.W.	251	2,250,000

gauge is a small diameter tube which extends through the shell of the tank through a bushing. The gauge is mounted usually in the end of the tank at the center of the head. Sometimes it is mounted in the side of the tank, being located midway between the top and bottom. The inside end of the tube is bent in an arch so that the end practically touches the bottom of the tank. The tube is so bent that it can be rotated from the outside, moving the end of the tube from the bottom to any position up to the top of the tank.

On the outside of the tube is fastened a pointer which shows the position of the bent tube end. On the outside end of the pipe is connected a small valve. If the restriction in this valve is no larger than a No. 54 drill size hole, no excess flow valve is required by the NFPA LP-Gas code in the gauging line. The gauge is operated by opening the valve in the gauge line and rotating the tube until the surface of the liquid is found.

Vapor Is Difficult To See

If liquid is being discharged from the valve, a high density fog or vapor is seen. If vapor is being discharged from the tube, it is more difficult to observe. The point where the discharged fluid changes from liquid to vapor or from vapor to liquid is easily distinguished. By slowly rotating the tube it is possible to establish relatively accurately the liquid level in the container. Generally a dial is mounted on the gauge so that the indicator shows directly the percentage of the volume occupied by the liquid in the vessel. Likewise, the dial shows, usually, the maximum quantity which may be placed in the container for various liquid temperatures and specific gravities.

How Gauge Operates

The slip tube gauge operates in the same manner as the rotary gauge but is constructed differently. In this gauge a tube extends through the top of the tank through a stuffing box to the inside. The outside end of the tube is equipped with a valve with a No. 54 drill size or smaller orifice. If a larger opening is used an excess flow valve is required. This tube is pulled up and down through the stuffing box until the liquid surface is located by noting the difference in discharge from the valve. The slip tube is marked in inches measured from the top of the tank to the end of the tube. Having a strapping table for the tank, it is possible to determine the quantity of liquid in the container for the various heights measured by the slip tube. Generally, a table which shows the maximum quantity of various specific gravity material at different temperatures that may be placed in the container is fastened conveniently close to the slip tube gauge.

The fixed dip tube type of gauge is also used extensively. In this type of device a tube is permanently fastened into the container. For aboveground tanks the length of the tube is determined so that it will show the maximum quantity of liquid which may be placed in

TABLE 8

THE I.C.C. AND N.F.P.A. MAXIMUM FILLING DENSITIES AND CORRESPONDING MAXIMUM LIQUID CONTENTS AT 60°F. FOR LIQUEFIED PETROLEUM GASES AT VARIOUS SPECIFIC GRAVITIES

	Above Ground Containers				Underground Containers	
	0 to 1,200 Gals.		Over 1,200 Gals.		All Capacities	
LPG Sp. Gr. at 60°F.	% Total of Water Cap.	Maximum LPG Contents at 60°F. Volume %	% Total of Water Cap.	Maximum LPG Contents at 60°F. Volume %	% Total of Water Cap.	Maximum LPG Contents at 60°F. Volume %
.473 - .480	38	80.4 - 79.2	41	86.7 - 85.5	42	88.7 - 87.5
.481 - .488	39	81.0 - 80.0	42	87.3 - 86.0	43	89.4 - 88.1
.489 - .495	40	81.9 - 80.9	43	88.0 - 86.9	44	90.0 - 88.9
.496 - .503	41	82.6 - 81.5	44	88.6 - 87.5	45	90.6 - 89.5
.504 - .510	42	83.4 - 82.4	45	89.4 - 88.3	46	91.4 - 90.2
.511 - .519	43	84.0 - 83.0	46	89.6 - 89.1	47	91.9 - 90.6
.520 - .527	44	84.6 - 83.5	47	90.4 - 89.2	48	92.3 - 91.1
.528 - .536	45	85.2 - 83.9	48	90.9 - 89.5	49	92.8 - 91.4
.537 - .544	46	85.6 - 84.6	49	91.2 - 90.1	50	93.0 - 92.0
.545 - .552	47	86.2 - 85.1	50	91.7 - 90.5	51	93.5 - 92.3
.553 - .560	48	86.8 - 85.7	51	92.2 - 91.1	52	94.0 - 92.9
.561 - .568	49	87.3 - 86.3	52	92.6 - 91.6	53	94.4 - 93.4
.569 - .576	50	87.9 - 86.7	53	93.1 - 91.9	54	94.9 - 93.7
.577 - .584	51	88.4 - 87.4	54	93.6 - 92.5	55	95.3 - 94.2
.585 - .592	52	88.9 - 87.8	55	94.0 - 92.9	56	95.8 - 94.5
.593 - .600	53	89.4 - 88.3	56	94.4 - 93.3	57	96.1 - 95.0
.601 - .608	54	89.7 - 88.8	57	94.7 - 93.8	58	96.4 - 95.4
.609 - .617	55	90.4 - 89.1	58	95.3 - 94.0	59	96.9 - 95.6
.618 - .626	56	90.6 - 89.6	59	95.5 - 94.4	60	97.1 - 96.0
.627 - .634	57	90.9 - 89.9	60	95.7 - 94.7	61	97.3 - 96.2

the tank, assuming the liquid to be 40 F.

In an underground container the temperature of the liquid is assumed to be 50 F. The fixed dip tube is used only as an indication of when the maximum quantity of liquid has been placed in a container. The method of operation is to open the valve on the dip tube and to pump liquid into the container. When the discharge from the valve outlet changes from vapor to liquid, the flow should be stopped immediately as the maximum allowable quantity of liquid has been placed in the container.

Provision is made usually in unfired pressure vessels, especially in the larger sizes, for a thermometer well so that the temperature of the liquid can be determined. The thermometer well is filled, generally, with a low freezing point liquid and the thermometer inserted into this fluid. Care must be exercised to read the thermometer immediately after withdrawing it from the well. A minimum of time should elapse in order that the atmospheric

temperature may not cause a change in the reading before it is observed.

All aboveground containers with a water capacity exceeding 1200 gallons must be electrically grounded according to the National Fire Protection Association LP-Gas code.

Vessels Should Be Protected

As previously pointed out the exterior of unfired pressure vessels should be protected against corrosion. In aboveground containers it is desirable that the exterior surface also be covered with a heat reflecting paint. Generally aluminum or white paint is used for this purpose. The use of such coating is very helpful in keeping the liquid temperature down and the resulting vapor pressure from becoming too high. This heat reflecting coating is an effective protection against corrosion.

Frequently the question is raised as to the maximum number of piers necessary to adequately support an unfired pressure vessel used to store liquefied petroleum gas. Since unfired pressure vessels used to store LP-Gas are fusion welded, adequate strength is present to consider it as a beam. In supporting a tank as a beam it is desirable to have the supports relatively near the ends in order to secure the reinforcing effects of the ends. Theoretical considerations clearly indicate that two supports located near the ends of the tanks are sufficient and no undue strains are set up in the unsupported parts of the tank between the piers.

Strain gauge tests made by a large tank manufacturer indicated that the reinforcing effect of the end may be overemphasized and there appears to be no excessive strain resulting from supporting a tank at a point ¼ of its length from the end although it appears desirable practically to locate the piers as close to the ends as possible. If more than two pairs are used the necessity of securing an absolute alinement between the various piers is present. If not perfectly alined and kept that way, one pier may take more than its share of the load which may result in high local stresses which under certain conditions might become excessive. Years of experience have proved the adequacy of two piers in supporting liquefied petroleum gas containers.

Dykes Built for Emergencies

To restrict the contents of low pressure containers storing flammable liquids from freely flowing around the ground in case the tank is ruptured, dykes are built frequently around the containers. The volume contained within the dyked area is sufficient to adequately hold the liquid contents of all the tanks within its walls.

The same type of reasoning is applied occasionally for the need of dykes around liquefied petroleum gas containers. It is assumed that if an LP-Gas vessel is ruptured the dyked area will be available to keep the liquid which might be lost from flowing freely around the ground. This reasoning is not sound, however, based on a knowledge of the

physical properties of liquefied petroleum gases. Because of its high volatility, or low boiling point, any reasonable quantity of liquid discharged into the atmosphere will vaporize almost immediately with little or none reaching the ground. If a large amount of liquid is discharged it will readily vaporize, the heat of vaporization being furnished from the ground and the surrounding air.

Therefore, a dyke will serve no useful purpose for holding any spilled liquid. On the other hand, a definite hazard is created by its use. The specific gravity of liquefied petroleum gas vapors is greater than that of air. Therefore, if a still atmosphere exists, liberated gas will have a tendency to remain close to the ground until it becomes disfused in the air. Generally, however, a reasonable amount of air convection is present which will help dissipate the gas rapidly.

When Dykes Are Hazardous

If a dyked area is present, any liquefied petroleum gas which may escape in the area will be confined to some extent. Because of the dykes, greater time will be required to dissipate the gas into the surrounding air. Therefore, dykes may actually offer a hazard which would not exist if they were not present.

It can thus be seen that the design and use of unfired pressure vessels in the liquefied petroleum gas industry is based not only on considerable fundamental data but also on a long and satisfactory service record. The basic principles of design and use of unfired pressure vessels in steam boiler and air receiver service cannot be applied directly in the design and use of containers used in the liquefied petroleum gas industry.

Improvements are continually being made in the safe handling, storage and utilization of LP-Gas. The accident record for this relatively new and fast growing industry indicates that the past ideas of design and use of pressure vessels are sound and insure adequate safety to personnel and property.

Has Office on Farm, Using Barn for Appliances

A farm on the prairie about two miles from Elwin, Ill., is headquarters for Erwin Fiesler, owner of the Gas & Electric Sales Co. and the Gas & Electric Service Co.

The operations of his sales company revolve around the sale of appliances in the rural and farming area surrounding his farm. His large stock of appliances fills two barns and overflows to fill four large hospital tents which Mr. Fiesler bought from the war surplus stock.

The big barn on the farm was converted into a knotty pine showroom and sales office. Future plans call for additional showrooms upstairs where lines of furniture will also be added.

To supply gas for the appliances he sells, Mr. Fiesler established his service company which buys LP-Gas in lots of as much as three tank carloads at a time, then bottles and delivers it. He recently installed a 30,000 gal. bulk storage plant in Macon, Ill., to serve his 2000 customers.

Mr. Fiesler spent almost 20 years with Cities Service Oil Co.

State Association and National School Carry To The Dealers

Safety-Service Training Schools

By BOB FARSON

MISSISSIPPI butane gas dealers and a large number of their key employes completed a full month of safety-service training schools, serving every section of the state, Sept. 11, which were unique in that they combined for the first time a sustained schedule of training sponsored by a state association with the proven instruction and demonstration methods of a national industry training school.

E. A. CLIFFORD

This effective training school drew approximately 100 men from the industry, as well as representatives of the state regulatory authority and insurance representatives from Mississippi and adjoining states. In fact, so enthusiastic were state LP-Gas inspectors regarding the training program and the manner in which it was conducted that they have suggested that "all men working in the LP-Gas field should attend this or a similar course before being permitted to work directly with LP-Gas."

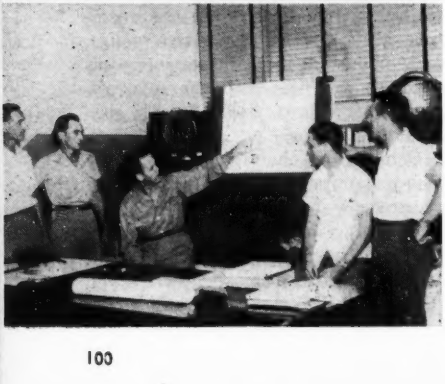
The Butane Gas Dealers of Mississippi, Inc., sponsored and conducted these training schools. Each school started Tuesday morning, completing the 6-hour-a-day course on Saturday, making a total for each group of approximately 30 hours on the vital operating problems of the industry.

Cooperating with the association was the National L-P Gas Institute, installation and service training school for the industry, at Tulsa, Oklahoma. The institute supplied the training plan, text for each trainee, and demonstration materials. The instructor-in-charge, W. H. Scott, has been with the institute staff for the past two years, as well as having previous experience in LP-Gas maintenance, installation, plant design and construction.

Others of the institute's staff who participated in the four weeks' program were E. A. Clifford, chief instructor and nationally recognized authority on gas utilization and safety practices, and H. H. Asling, staff instructor on internal

combustion engines and LP-Gas carburetion. A number of representatives of manufacturers of pertinent equipment and appliances also participated in these sessions.

The first two weeks' sessions were held in Oxford, Miss., under the supervision of H. H. Whitworth, of the Whitworth Butane Gas Co., of Oxford, treasurer and director of the association. The second two weeks' training sessions were scheduled for Jackson, the state capitol, where the state senate chamber had been reserved. These were under the immediate supervision of B. C. Knight, manager, Sandifer Butane Gas Co., Jackson.



The reaction of those participating in these training sessions is pretty well covered by the report of T. R. Ewing, general manager of Butane Gas of Mississippi and Alabama, Inc., Tupelo, a director of the state association and one of the prime movers of this very successful safety-service school. Mr. Ewing says:

"I talked to every dealer and practically all of the employes who attended the first two weeks, and every man feels he gained a great deal of knowledge and very important facts from the course. The thoroughness with which every detail of the instruction program was planned and arranged, as well as its presentation, had much to do with the success of the entire course.

"Mississippi dealers really feel fortunate in having the opportunity for so thorough a training program. I understand this program is available to any state association or sizeable group of distributors. As a matter of fact several have already investigated its operation here. I hope very sincerely that dealers throughout the country will

---

TOP (Left to right): Lynn Benny, John E. Mitchell Co.; W. H. Scott, instructor-in-charge, National L-P Gas Institute; H. H. Whitworth, Whitworth Butane Gas Co.; T. R. Ewing, Tupelo dealer and chairman of committee in charge of training school.

BOTTOM (left to right): W. W. Brown, M. C. Dancy, Graeber Bros. Butane Gas Co.; W. H. Scott, instructor-in-charge; H. H. Whitworth; J. T. Rogers, Motor Vehicle Comptrollers' office.

recognize the importanec of their employes having as systematic and practical a presentation of these safety-service problems and practices as we have had."

Also commenting on the training school, Joe E. Gardner of the Gardner Butane Gas Co., Natchez, and president of the state association, says:

"We had realized for some time the need for such a training program, based on the fundamentals of safety and improved installation and service standards. Getting it started, however, was difficult, due to the lack of qualified instructors and suitable text material. This the National LP-Gas Institute supplied, as well as the services of its staff of engineers, consultants and instructors. This has enabled us to have a most instructive and constructive training school, the first, I believe, of its kind to be held in the South."

Drew Out-of-State Men

Numerous representatives of other state associations and large distribution groups have also been attendants at various sessions of the Mississippi training school.

The entire committee in charge of the two-weeks section at Jackson follows:

B. C. Knight, chairman, Sandifer Butane Gas Co., Jackson; John H. Allen, Jr., chief inspector, Mississippi Motor Vehicle Comptroller's Dept., Jackson; R. R. Moulden, Moulden Supply Co., Jackson; J. B. McKay, McKay Plumbing Co., Jackson; J. E. Gardner, Gardner Gas & Appliance Co., Natchez; and Dewey Dearman, Hattiesburg Butane Co., Hattiesburg.

Credit Control Regulations Became Effective Sept. 20

The Federal Reserve Board has issued regulations (Regulation W) controlling credit under the recent "anti-inflation" measure passed by Congress. These regulations became effective Sept. 20, 1948, remain in effect until June 30, 1949, and apply to installment purchases between $50 and $5000.

Merchants making installment sales must register with the Federal Reserve Bank or branch in their district within 60 days after Sept. 20. Licenses issued in accordance with the regulation may be suspended if the merchant commits a "willful or negligent" violation of the regulations.

Under the regulations, a down payment of 20% is required on "cooking stoves and ranges" and "refrigerators," among other listed household appliances and furnishings. Installment credits, whether to finance the purchases of these articles or not, up to $1000 must be paid off within 15 months with minimum monthly payments of $70.

Installment credit for home improvements is not covered in the present regulations although reported under consideration. Copies of Regulation W may be secured from the Federal Reserve Bank or Federal Reserve Branch Bank for a complete listing of the requirements on installment sales.

Texas Firm Receives Charter

Hazel J. Farrar, J. A. Farrar, and Tom Street are the incorporators of the Bellmead Butane Gas & Appliance Co., Inc., Waco, Texas.

A 50-year charter has been granted with authorized capital stock listed at $35,000.

Truck Driver's "Clinic" Shows How Easy It Is To Be Safe

By O. D. HALL

A ONE-Day LP-Gas and gasoline fire fighting and prevention clinic staged in Oklahoma City, Okla., Aug. 24 by the Oklahoma Liquefied Petroleum Gas Assn., proved so successful that it may become an annual event. It was a variation of various educational meetings being held this summer by the association.

The program was conducted at two locations. In the forenoon about 100 employes of various LP-Gas firms, many of them truck drivers and route deliverymen, watched at the soft ball park near the state highway patrol building, several fires set at the end of a ⅜-inch copper pipe connected to a 100-lb. butane tank. They were extinguished in an average of 1½ seconds.

Next a strip of bare ground 4 ft. wide by 20 ft. long was sprayed with butane and set on fire. The flames were extinguished in an average of 2½ seconds.

A 55-gallon drum was cut in half and about 3 gallons of gasoline were placed in one half of it to simulate conditions of a garage or shop fire. Several fires were set to gasoline in this manner and the average time of extinguishing was about 2 seconds.

A standard propane gas delivery truck of the American Butane and Propane Gas Co., of Oklahoma City, was then driven on the lot and a fire was set at the nozzle of about 50 feet of regulation truck hose. Twenty- and thirty-pound hand extinguishers were used on this demonstration and the roaring blaze was put out within a few seconds.

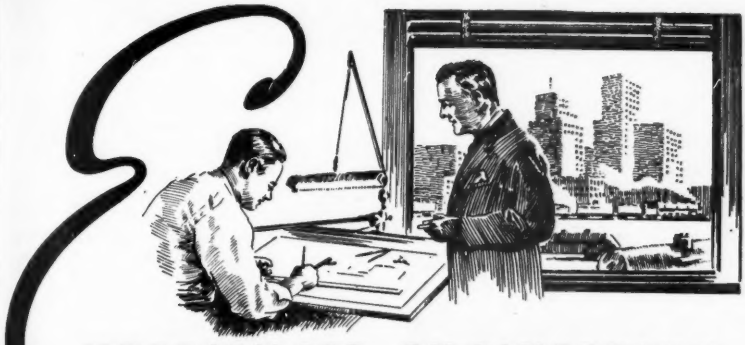
Approved hand extinguishers ranging in size from 4 lbs. to 30 lbs., were used in all the demonstrations. They were supplied by the Fire Appliance & Supply Co., of Oklahoma City. Several fires were set and extinguished under each classification, both by experts of that company and by a number of employes of LP-Gas companies who volunteered for the job.

Speaker Urges Great Care

Standing beside the LP-Gas delivery truck, H. M. Hone, Phillips Petroleum Co., emphasized the importance of such equipment. He urged the greatest care in operating one of these trucks as it must carry a "bulk station down the highway, through 'Main street' and up a winding lane to the customer's back door." (Mr. Hone's paper will appear next month.

Mr. Hone urged all operators and distributors of LP-Gas to study and be guided by the rules governing LP-Gas tank trucks such as NBFU Pamphlet No. 58, ICC Motor Carrier Tariff No. 7 and their state rules.

At the afternoon meeting the U. S. Bureau of Mines put on a demonstration showing various conditions under which explosions may occur, particularly while handling gasoline, natural and liquefied petroleum gases. The demonstrator emphasized that none of these fuels are dangerous if handled with knowledge of their



EXPERIENCED ENGINEERING SERVICE

When Butane and Propane were first released for commercial and domestic use, this company had a worldwide reputation for the manufacture of quality built petroleum tank fittings. This company had the "know how" in all types of safety, conservation, measuring and handling equipment. With the phenomenal expansion in the uses of L.P. Gases, S. & J. engineers have kept abreast of developments, first at the refinery level; thence in the field of distribution, on land and by sea. When you contemplate expansion of storage facilities or delivery equipment, ask us about the fittings you will require.

SHAND & JURS CO.
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characteristics and with the exercise of common sense.

An interesting feature was a talk and "Driving and Traffic Knowledge Test," given by R. H. Snyder, director of Oklahoma City driver testing service. He handed each attendant a questionnaire carrying 50 questions intended for testing the knowledge of commercial drivers. After these were filled in each driver's answers were checked by the correct answers by the man who sat across the table from him and then handed back to him after grading.

Most accidents are caused by human failures or defects which can be corrected, the speaker said. Out of 1200 drivers examined it was found that 28% had visual defects, most of which, however, could be corrected by proper professional care.

The clinic was under the direction of C. O. Whisnand, Lawton, president, and Fred L. Yates, executive secretary, of the Oklahoma LP-Gas Association. M. G. Young, state fire marshal, and his field inspectors witnessed the demonstrations.

LEFT (from top to bottom): This fire from 100-lb. tank of butane was put out in 1½ seconds. Flame carried to plate in center from ¾-in. copper line connected to tank.

Another view of extinguishing the flame from 100-lb. tank. The chemical is just being applied from hand extinguisher and presto! the fire is out.

Crowd waiting for arrival of propane delivery truck.

Out goes the roaring flame from hose line attached to the propane truck! Note nozzle end of hose is weighted down to prevent rearing and spraying watchers with fire while fire is being put out with 30-lb. hand extinguisher.

A patch of butane spilled on the ground was set afire and extinglished in 2½ seconds.

THE CIRCULAIRE

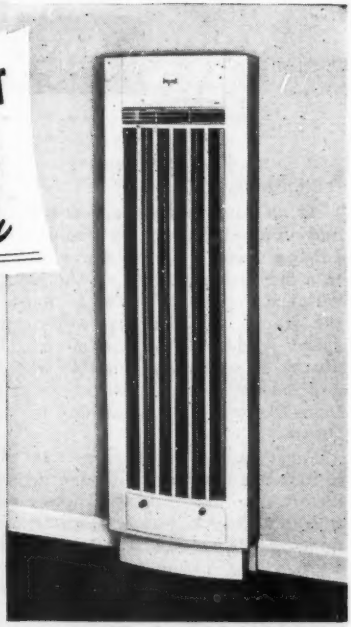
Bryant Model 401

Here's a new panel heater that's at home anywhere . . . pleasing to look at, yet inconspicuous in *any* room!

***Circulaire* heats *two* ways: quick, penetrating, head-to-toe comfort by radiant rays, *and* the invigorating freshness of clean, circulated warm air.**

Only 5½ inches thick, *Circulaire* requires little floor space, mounts flush to the wall with only 4 screws applied to studding. *No cutting* of floors or floor coverings.

Sell the *Circulaire* for auxiliary use or year-round service. Three sizes for natural, manufactured, LP and other gases, manual or automatic controls. A.G.A. approved.



CIRCULAIRE features built-in draft diverter entirely enclosed by the sturdy ivory-enamel-finish steel cabinet.

BURNER COMPARTMENT, with front door access, conceals controls and the quiet, multiple-drilled-port cast iron burner.

HEAT EXCHANGER is separated from wall and cabinet front by multiple air spaces, is made of welded steel. ***"Ruffled" porcelain enamel front increases its radiating capacity.***

☐ Send me more information on the Circulaire Panel Heater.

☐ Send your NEW 12-page book, "Water Heating with LP-Gas."

Bryant Heater Company, LP-Gas Division
17825 St. Clair Ave., Cleveland 10, Ohio

Name.....

Address.....

City.....State.....

Let the pup be furnace man

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AUTOMATIC HEATING

BRYANT HEATER COMPANY - CLEVELAND, OHIO

ASSOCIATIONS

Kansas

At an Aug. 12 meeting of directors and representatives of the Kansas LP-Gas Assn. much time was devoted to a discussion concerning the lack of editorial comment in the columns of the state's farm papers, while much space is devoted to the electric industry. A publicity committee was organized for the purpose of securing more editorial cooperation in the future.

Farm paper advertising was also an important topic at the meeting. An advertising program was determined upon at that time and the first ad appeared Aug. 21 in the "Kansas Farmer," a paper said to have a subscription list of more than 100,000 rural readers.

The half-page advertisement, to be alternated between the "Kansas Farmer" and the "Weekly Kansas City Star," carried to the user the story of adequate storage, urging the consumer to larger storage as a solution to the problem of winter shortage.

Louisiana

L. C. Parker, executive secretary of the Louisiana Butane Dealers Assn., Baton Rouge, La., has recently compiled a summary of the tax statutes enacted in 1948 affecting LP-Gas dealers in Louisiana. These follow:

Act 7 Levies an additional 2¢ per gallon tax on gasoline, increasing the total tax from 7¢ to 9¢ per gallon; effective June 8, 1948;

Act 9 Increased the sales and use tax from 1% to 2%, and taxed the sale of services; effective same date;

Act 10 Amends Severance Tax Act by increasing the rates of tax on all natural resources severed from sail or water; effective same date;

Act 11 Re-enacted the gas gathering tax and increased rate from ½¢ to 1¢ per 1000 cu. ft.; effective same date;

Act 137 Amends use fuel tax law so as to increase rate from 7¢ per gallon to 9¢; effective same date;

Act 208 Levies tax on producers of natural gas, equal to the difference between (1) the price received by the producer for the royalty owner's interest in the gas and any liquid hydrocarbons produced in combination therewith, and (2) the price actually paid by the producer to the royalty owner therefor; effective Oct. 1, 1948.

Tennessee

Amid a spirit of friendly cooperation and mutual support, the first annual convention and trade exhibit of the Tennessee Liquefied Petroleum Gas Assn. was held at the Andrew Jackson hotel in Nashville, Aug. 30-31.

Nearly 140 industry men attended —dealers and distributors, exhibitors, manufacturers and their representatives—and they all contributed their full shares to make the occasion one at which good fellowship reigned.

The following were elected to office:

President — Joe F. Thompson,

Southern Butane-Propane Gas Co., Columbia.

Vice president—W. E. Keller.

Secretary-treasurer—J. C. McReynolds, Jr. (re-elected).

The retiring officers are Paul G. Boyd, president, and R. W. Williams, vice president.

The harmonious meeting emphasized the value of the Tennessee state association to dealers and the importance of holding regular meetings so that dealers can get together to discuss their problems and to learn that most of their competitors are good fellows!

The program included the following men and the topics they discussed:

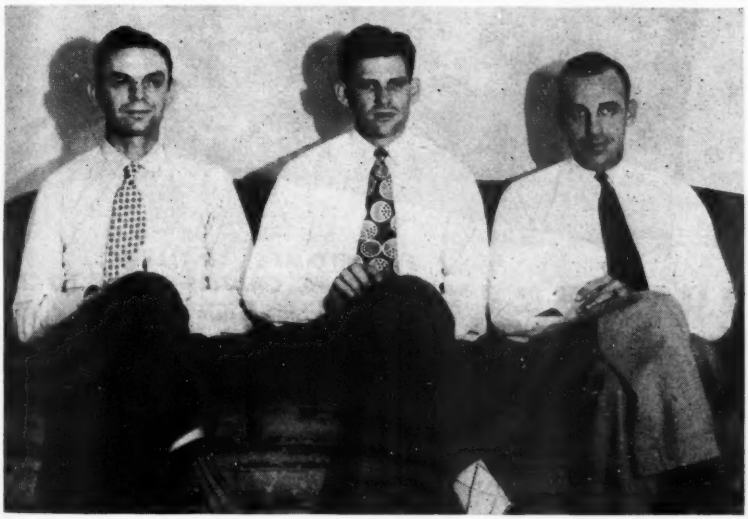
"Why and Wherefore"—Elwin E. Hadlick, executive vice president, National Butane-Propane Assn., Minneapolis.

"Future Supply and Demand Outlook"—Richard Morgan, Warren Petroleum Corp., Tulsa.

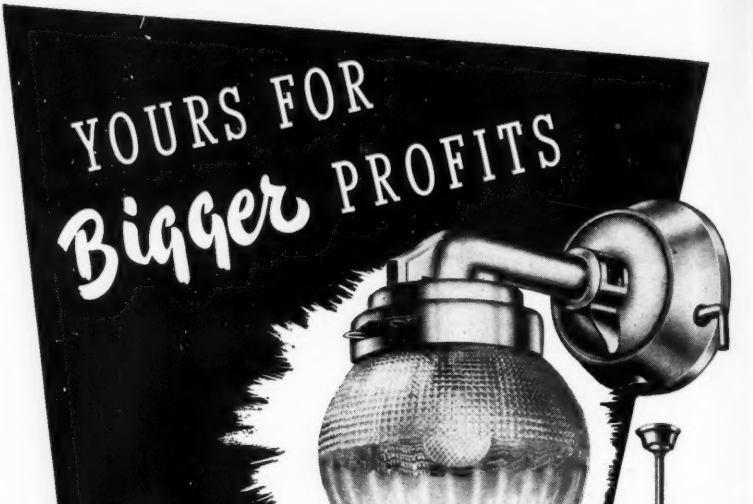
"Profit Package"—Ed. Sweeney, Jr., Beals Creative Printers, Oklahoma City.

"When is LPG Equipment Safe"—Ralph H. Engstrom, The Bastian-Blessing Co., Chicago.

"LP-Gas Industry of Today"—J.D.



New officers of the Tennessee Liquefied Petroleum Gas Assn. (left to right): Joe F. Thompson, newly elected president, Southern Butane-Propane Gas Co., Columbia; J. C. McReynolds, Jr., secretary-treasurer, Nashville Butane Gas Co., Nashville; and Paul G. Boyd, retiring president, Airlene Gas Co. of Fulton, Fulton, Ky. R. W. Williams and W. E. Keller, retiring vice president and newly elected vice president, respectively, were not present at the time this photograph was taken.



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FOR HOMES, TRAILERS, CABINS AND STORES

Here's a profit making item that sells in every season. These rugged . . . handsome . . . dependable lamps are ideal for regular lighting service in homes, camps, trailers, cabins, stores and countless other places throughout the country. Write us now for complete literature and prices on these fast selling L-P Lamps.

A HUMPHREY PRODUCT

GENERAL GAS LIGHT COMPANY
KALAMAZOO, MICHIGAN

Hill, The Weatherhead Co., Cleveland.

A. O. Beyer, The Coleman Co., Fort Worth, Texas.

T. G. Tackett, Memphis.

On the evening of Aug. 30, the annual banquet was held, preceded by a friendship hour sponsored by manufacturers and distributors.

Virginia

More than 50 dealer and distributor members of the liquefied petroleum gas industry in the state of Virginia met at the Hotel Wm. Byrd in Richmond, Sept. 1, for the purpose of forming a state association. With E. O. N. Williams of the Bottled Gas Corp. of Virginia, Richmond, and LPGA director for that state, acting as temporary chairman, the following interim officers were elected:

President: E. O. N. Williams.
Vice President: J. C. Lawrence.
Secretary-Treasurer: Tom Sykes.

Elected to the board of directors were the following:

Ralph Frye, Bristol; D. C. Earhart, Staunton; R. Cassett, Virginia Beach; George Noblett, Kilmarnock; R. F. Pecht, Lawrenceville; Mott Robertson, Lynchburg.

The officers were instructed to prepare a permanent constitution for the state association and to present it at the next meeting at which time permanent officers will be elected.

In connection with the organizational meeting, as part of the program there was a luncheon that was addressed by Mayor Edwards, of Richmond, and an afternoon program of three presentations on industry subjects. The Richmond representative of the Hartford Accident and Indemnity Co., gave an interesting and enlightening talk on the necessity for insurance coverage and its availability to the LP-Gas industry.

Secretary Arthur C. Kreutzer, of LPGA, spoke on current industry problems and the place of the national and state associations in solving these problems.

Highlighting the program was a visual demonstration of the right and wrong method of making bottled gas installations. This feature was presented by Walter Hoagland, of the Fisher Governor Co., with the assistance of slides furnished by LPGA's safety engineer, John Knox Smith.

Tentative plans call for the next meeting of the Virginia state association to be held sometime after the first of the year.

Texas

At the first meeting of the new board of directors of the Texas Butane Dealers Assn. on Aug. 9, the city of Dallas was selected as the convention point for the 1949 gathering. There will also be the customary trade show in connection with the convention.

The dates will be announced later.

Propane Will Be Theme For CNGA Fall Meeting

"Program arrangements for the 1948 California Natural Gasoline Association's Fall Meeting have been completed," was the recent announcement of Chairman Randal Maass, General Petroleum Corp. Mr. Maass, who has a wealth of experience at solving problems of the natural gasoline and refining industries, stated that in preparing the program, his committee has selected "Propane" as the theme.

The meeting is scheduled for Fri-

day, Oct. 8, at the Ambassador hotel, Los Angeles, with the morning session devoted to presentation of technical papers, the afternoon featuring an "Information Please" session and the evening given over to the association's annual banquet.

President Kirk points out the fact that the material to be presented has a definite value to men outside the natural gasoline industry as well as to the association's membership. He therefore extends an invitation to all executives, engineers and chemists in the petroleum, natural gas and liquefied petroleum gas industries to attend. No admission or registration fees are charged for attendance at any of the day-time events.

Committee members striving to provide the industry with an outstanding program are: Randal Maass; M. L. Arnold, Richfield Oil Corp.; Ira C. Bechtold, the Fluor Corp., Ltd.; W. C. Dayhuff, California Research Corp.; Fred L. Hartley, Union Oil Co. of California; M. W. Kibre, General Petroleum Corp.; R. S. Ridgway, Standard Oil Co. of California; J. B. Taylor, Signal Oil & Gas Co., and George L. Tyler, E. I. DuPont Co.

Texas Dealer Increases Bulk Storage to 36,000 Gals.

An additional 6,000-gal. propane storage tank has been installed by Dillard Peek, PBS Motor Co., Clarksville, Texas.

This new installation now brings the company's storage up to a total of 36,000 gals.

This picture shows Dr. T. Waldo Morgan (second from left) presenting W. U. Moss (second from right) with the gifts bestowed upon him by friends and associates while he was director of the Louisiana Liquefied Petroleum Gas Commission. (For story see Page 166, September issue, Butane-Propane News.) Shown in picture are (left to right), seated: Messrs. Vollman, Morgan, Keller, Moss, Miller. Standing: Messrs. Anzalone, McCormick, Sims, Parker, Anderson, Jones, Moore, Smith.

FIRST in sales...

Florence Dual-Oven* Ranges must be FIRST in value

Approved by American Gas Association and Anthracite Industries Laboratory

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Sell your Customers the best... sell Florence

Now Florence helps you get more sales with these special Dual-Oven Combination Ranges. Users can cook with oil or gas... coal or gas, and bake with either or both. Keeps kitchens warm in winter, cool in summer, provides a constant supply of hot water with the easily installed Florence water heating attachment (sold separately).

***IMPORTANT**

You Can Sell Florence Dual-Oven Combination Ranges for

SOFT COAL (or wood) AND LP-GAS

HARD COAL AND LP-GAS

OIL AND LP-GAS

Florence LP-GAS RANGES

* FLORENCE STOVE COMPANY... General Sales Offices and Plant: Gardner, Mass. Western Sales Offices and Plant: Kankakee, Ill. Southern Plant: Lewisburg, Tenn. Other Sales Offices: One Park Ave., N. Y.; 1459 Merchandise Mart, Chicago; 53 Alabama St., S.W., Atlanta; 301 North Market St., Dallas.

CALENDAR

All associations are invited to send in dates of their special and annual meetings for this calendar.

Oct. — —LPGA Short Course. Colorado School of Mines. Golden, Colo.

Oct. 4—AGA Convention and GAMA Exhibition. Atlantic City, N. J.

Oct. 6-7—LPGA Board of Directors. Claridge Hotel. Atlantic City, N. J.

Oct. 7 — North Eastern District, LPGA. Claridge Hotel. Atlantic City, N. J.

Oct. 7-8—Nebraska LP-Gass Assn. Rome Hotel, Omaha.

Oct. 8—California Natural Gasoline Assn. Annual Fall meeting. Ambassador Hotel, Los Angeles.

Oct. 11-12—Kentucky LP-Gas Assn. Brown Hotel. Louisville.

Oct. 14-15—Missouri LP-Gas Assn. convention and trade show. Jefferson City.

Oct. 15—NGAA Regional Meeting. Fairgrounds. Shreveport, La.

Oct. 15—Southern Regional Meeting of Natural Gasoline Assn. of America. Washington-Youree Hotel. Shreveport, La.

Oct. 16—South Carolina LP-Gas Assn. Columbia.

Oct. 18-21 — National Safety Congress. Chicago.

Nov. 8-11—American Petroleum Institute. Stevens Hotel. Chicago.

Nov. 19-20—Montana LP-Gas Assn. Billings.

1949

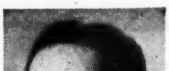
April 20-22—Natural Gasoline Assn. of America. Texas Hotel. Fort Worth, Tex.

May 9-11—Liquefied Petroleum Gas Assn. Annual Convention and Trade Show. Palmer House. Chicago.

May 25-27—Gas Appliance Manufacturers Assn. Annual meeting. Drake Hotel. Chicago.

Pittsburgh School Draws Big Crowd

THE first of a series of LPGA-sponsored service schools was held Sept. 8-10 at the University of Pittsburgh, Pittsburgh, Pa., with a registration of 175 men eager to profit



W. HOAGLAND

DON FAIRCHILDS

from the many lectures. Classes were held in both the "Cathedral of Learning" and Foster Memorial hall.

Following the welcoming address of professor H. G. Botset, head of the Petroleum Engineering department at the university's school of engineering and mines, K. R. D. Wolfe, chairman of the association's educational committee, talked on the scope and aims of the school. He brought out the thought that those attending would, in turn, organize classes among dealers, thus spreading knowledge to "the grass roots."

Among the speakers and their subjects were the following:

"Fundamentals of LP-Gases and Gas Laws"—M. D. Crane spoke in place of Dr. R. W. Miller, Hope Natural Gas Co., Pittsburgh.

"Customer Relations" — E. Carl

GEO. McFADDEN

GEO. W. GRAY

Sorby, Geo. D. Roper Corp., Rockford, Ill.

"Proper and Safe Methods of House Piping"—John Szitar, Weatherhead Co., Cleveland.

"Proper Use and Servicing of Container Fittings" — Ralph Engstrom, Bastian-Blessing Co., Chicago.

"Proper Conversion Procedures for Ranges and Other Appliances" — George R. Kelley, Utilities Distributors, Inc., Portland, Me.

"Fundamentals of Safety in Handling of LP-Gas"—J. F. Sensenich, Atlantic States Gas Co., New York.

"Fundamentals of LP-Gas Regulators"—K. D. R. Wolfe, Fisher Governor Co., Marshalltown, Iowa.

"Principles of Combustion"—Frank Henke, Harper-Wyman Co., Chicago.

A "Regulator Clinic" was presented by the Bastian-Blessing Co., Fisher Governor Co., and the Weatherhead Co.

"Installation and Servicing of Water Heaters"—H. B. Kivlan, Ruud Manufacturing Co., Pittsburgh.

"Venting of Appliances" — Carl Dean, Heating Research Corp., Anderson, Ind.

"Installation and Servicing of Ranges"—John A. McGinley, George D. Roper Corp., Rockford, Ill.

"Installation, Servicing and Adjustment of Servel Refrigerators"—Charles Esquew, Servel, Inc., Evansville, Ind.

"Principles of Space Heating" — George H. McFadden, Ohio Foundry & Manufacturing Co., Steubenville, Ohio.

"Construction, Care and Use of Cylinders"—C. E. Johnson, Scaife Co., Oakmont, Pa.

"Transportation and Dispensing of LP-Gas to Consumer Bulk Tanks"—George Gray, Verkamp Corp., Cincinnati.

"Installation and Servicing of Vapor Meters"—Robert Borden, Metric Metal Works, Erie, Pa.

"LP-Gas Liquid Pumps" — D. D. Buttolph, Phillips Petroleum Co., Bartlesville, Okla.

The arrangements for this Eastern gas dealers school were made by the educational committee of District 7 consisting of Alton Lutz, chairman, Frank Fetherston, Walter Hoagland, Don Fairchilds, and John Knox Smith.

New Texas Pipeline Will Supply California Refineries

According to reports, construction of a 24-inch oil pipeline from West Texas to Los Angeles will start early next year.

The project, Texas-Western Oil Lines, is to be owned and controlled by the Texas producers and California refiners involved, and, it is reported, can be completed within 18 months. A minimum of 150,000 barrels per day is necessary for the operation of the line, and the company president is reported as saying that he expects to have that supply in hand soon.

Installation Methods and Moisture Problems in Underground Tanks

In Two Parts—Part 2

By GEORGE BOLANDER

Union LP-Gas Systems,
Parsons, Kansas

The heat required to vaporize 1 lb. of liquid propane is approximately 160 Btu's (at 30° F). This heat must be supplied by the liquid in the tank and ultimately by the outside surroundings through the surface of the tank. The effective surface for this heat transfer is the amount of surface in contact with the liquid.

Assuming that we use a tank of 150-gallon capacity for the installation discussed above, we find that the metal surface of the tank is approximately 36 sq. ft. If the tank is only one-quarter full, only 9 sq. ft. of this area will be effective.

Since the overall heat transfer per square foot of contact area, per degree Fahrenheit temperature difference, has been established as approximately 2 Btu's, it may be seen that the tank can supply only 2 times 9 = 18 Btu's per hour.

We have said a little while ago that 7 lbs. per hour had to be vaporized in this installation. At 160 Btu's per lb. this would require 1,120 Btu's per hour. Since only 18 Btu's can be supplied by the tank, this would indicate that the temperature of the liquid and the tank would have to be reduced by something like 1120 divided by 18 = 62° F. With this temperature differential a heat equilibrium is established. The temperature differential results in lower vapor pressures, as shown in our discussion.

Assuming now that the temperature in the locality of this tank is 30° F, the equilibrium temperature required to supply the necessary heat of vaporation would then have to be +30° F -62° F equals -32° F.

The pressure generated by the liquid at this temperature is only 5.5 psi gauge. At this inlet pressure, most propane regulators will deliver gas at a pressure which is so low that it is inadequate for smooth and continued performance of the appliances. From the standpoint of performance, therefore, it is very important to specify sufficiently large tanks so that the pressure of the gas, even when your tank is only one fourth full, does not fall below the 10-lb. pressure required to allow the regulator to perform smoothly.

In sizing a system we must remember these two important factors:

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- Autoweld Corporation was the first in the Southwest to make a genuinely lightweight L. P. Gas bottle of this type which fully qualified under the exacting I.C.C. specifications.
- Autoweld 5-gallon bottles have won a leading position among dealers and users in the United States and many foreign countries. They are dependable . . . and profitable.
- Every Autoweld 5-gallon bottle is a high-grade automatically-welded product made in one of the west's most modern specialized bottle-fabricating plants. Every bottle is thoroughly tested before shipping. All are equipped with standard P.O.L. valves and outage or stop filling valves when required.
- Autoweld "5's" are available in three types—screw cap, permanent guard, and cash-and-carry.

AUTOWELD MAKES AN L. P. GAS BOTTLE IN EVERY SIZE FOR EVERY PURPOSE.

Write for Complete Details

AUTOWELD CORPORATION

852 W. WHITTIER BOULEVARD • WHITTIER, CALIFORNIA

1. Capacity of the regulator.
2. Gas generating capacity of the tank.

Then, if we know the peak requirements in Btu's for a given installation we can provide adequate equipment.

The only sure way to meet possible peak demands is to use large capacity regulators and tanks, and, during cold weather, to keep the tank at least half full. There is little doubt, that even in very cold climate, the propane system belongs above ground, preferably in a location where air currents and wind will reach it.

Two Methods Compared

As we have seen in our discussion, very low temperature may exist in the liquid. If the tank is underground, the moist earth might freeze and form a good insulation, keeping heat from reaching the tank. Aboveground, however, especially if air currents are present, the frost on the tank will be evaporated, allowing the tank to take on more heat.

Remember that the tank can take on heat even in real cold weather, since the liquid in the tank is always colder than the surrounding temperature when gas is being withdrawn.

Perhaps the greatest enemy of the LP-Gas industry is the fact that, if moisture appears in a system even in very small quantities, regulators may freeze under certain conditions.

Referring to our past remarks on regulators, we have seen that the valve disc is opened only a very small slot. The passage of gas through a choke valve is a throttling process which permits the gas to expand at the orifice. This expansion is accompanied by a marked drop in temperature.

Referring to the Mollier chart for propane, we find that gas entering at 16° F will leave the regulator at approximately -12° F. Gas entering the regulator at +50° F will leave at approximately +12° F.

How Ice is Formed

This reduction in temperature at the orifice will gradually lower the temperature at that point and any entrained water vapor will be deposited as ice in or near the nozzle. Gradually, the ice will fill the space and the regulator is frozen.

The refrigeration industry, in particular, and the gas industry, as a whole, have been well aware of this fact and many ways and means have been tried to eliminate moisture.

The only sure way to eliminate it is by dehydration where gas is forced through beds of porous material capable of absorbing the water. While this is possible in large gas lines and refineries, it has been impractical in small LP-Gas installations. Cost and upkeep, up to the present, have been considered prohibitive.

The problem of moisture can be reduced to a minimum if every installer of systems would take the utmost care in avoiding water. Here are four simple rules:

1. The system must be drained of all water and the remaining moisture neutralized with wood alcohol before the tank is installed.
2. Delivery truck tanks must be checked for water at every filling.

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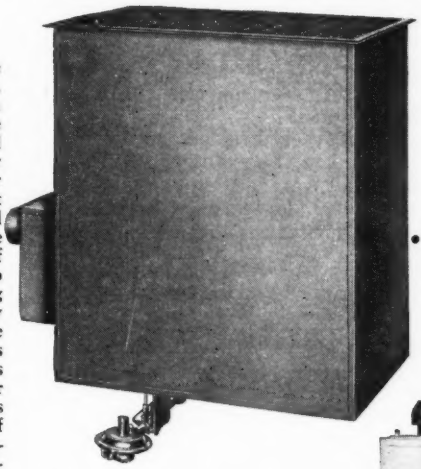
THE Saginaw Floor Furnace means extra business for you. For plenty of families right in your own community are in the market for a quality gas fired unit like this. Available in four popular sizes, it is ideal for small homes with or without basement, and for stores and similar structures. Moreover, the Saginaw is within the means of the smallest budget—both as to initial investment and operating cost. Factory assembled for easy installation, it complies with the National Safety requirements approved by American Gas Association. And like other products bearing the famous American-Standard Mark of Merit, the Saginaw Floor Furnace can be sold for modernization on the Heating and Plumbing Finance Corporation convenient Time Payment Plan. For details, contact your Wholesale Distributor. **American Radiator & Standard Sanitary Corporation,** P. O. Box 1226, Pittsburgh 30, Pa.



The **BUDGET** Automatic Storage Water Heater—has fuel-saving cast iron blue flame burner and safety controls. Center flue with spiral baffle insures quick recovery. Mineral wool blanket insulation between heavy galvanized steel tank and trim jacket prevents heat loss, increases efficiency. Comes in 3 sizes with 20, 30 and 40 gallon capacities.

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3. Use only fuel which has been dehydrated at the refinery. In these days of fuel shortage it may well be possible that the fuel delivered has some moisture in it and even under the best of conditions it cannot be eliminated entirely. However, correctly dehydrated fuel should not contain sufficient water to cause trouble.

4. Make sure that all hose equipment is kept dry. Remember, the small amount of moist air in the filling hose will condense out sufficient water to freeze a regulator under just the right conditions.

Each tank, therefore, before installation must be thoroughly drained of all water. A pint of alcohol per 100-gallon capacity must be added to neutralize any remaining moisture.

Water May Be Swabbed

Inspection of the tank before installation may be made by removing the relief valve on aboveground tanks and with a cloth attached to the bottom of a stick, water may be detected. If no possibility exists to turn the tank upside down, the water may be blown out as follows:

Raise the far end of the tank sufficiently high so that all water will collect below the liquid withdrawal pipe.

Install a vapor return valve in the liquid withdrawal opening. Attach a hose long enough to lead escaping vapors a safe distance away. A shutoff valve must be attached to the far end of the hose. Fill the truck tank hose (not the liquid hose) with wood alcohol and attach to the truck tank vapor valve and the tank vapor return valve.

Allow propane vapor from the truck tank to force the alcohol into the tank and after the pressure has raised to approximately 20 psi, open the liquid withdrawal line valve at the end of the purging hose and blow out all the alcohol-water mix.

Care must be taken that in this operation only the propane vapor is used since the use of liquid propane on contact with the water would tend to freeze the free water and form ice, which later may give trouble.

After this operation the tank should be purged of all air. The system is then ready for the first filling

At this time the liquid filler hose will be filled with wood alcohol which will be dispersed into the tank when the tank is filled with fuel. The alcohol will neutralize the remaining moisture and your troubles will be minimized. It is a good plan to add some alcohol, at each filling since there is strong possibility, particularly where mixtures of butane and propane are used, that some water is added at each filling.

More Water in Butane

Butane, as you know, is not dehydrated at the refinery and always contains some water. The water content, while relatively small, is much larger than the water content of propane.

It has been found that tank cars which carry alternately butane and propane often leave a water residue after use with butane, which will be absorbed by the dehydrated propane when this type of gas is carried. This applies to truck tanks and storage tanks. Care and cau-

tion will be the two elements to correct this condition until such time when the industry has outgrown the moisture trouble by providing more suitable equipment.

It is suggested that to guard against any water accumulating during a prolonged period, alcohol again be added to the system. This will be done most effectively by filling the filler hose just prior to attaching it to the tank so that the alcohol will be properly dispersed.

There are several means under discussion toward relief from freezing of regulators. None can be considered a fool-proof method to avoid it, that I know. One method is the theory of a slightly larger orifice. While a larger orifice does not always provide as exacting regulation as a smaller one, it is claimed to have the advantage to permit the ice formed to pass more easily through the orifice.

Two-Stage Regulators Used

A second method is the application of two-stage regulation. This method is reported to work in many cases. The high pressure is first reduced to, say 10-15 lbs., and this expansion is not too great to form ice. Larger orifices can be used and the temperature reduction at each regulator nozzle is less, thus preventing freeze-ups.

Remember, however, that freeze-ups will occur even in this set-up if considerable amounts of moisture are present. Particularly, at the first installation of the tank it will pay you to inspect thoroughly and remove all water and traces of moisture.

We recommend that in any event wood alcohol be added in the amount 1 pint per 100-gallon capacity. This finishes the processing of the tank at the operator's tank lot. We are now ready to locate the system at the user's home. The system shall be located in general accordance with the National Board of Fire Underwriters, Pamphlet No. 58, and the state rules governing such installation. Minimum distance from any building or adjoining property lines shall be as follows:

Water Capacity	Distance
125 to 500 gallons	10 feet
500 to 1200 gallons	25 feet

Also set the tank so it can be filled from a tank truck, and under any weather conditions.

Aboveground storage tanks shall preferably be set on two concrete footings, which should extend below the frost line and terminate approximately 6″ above the ground level. The footings shall be of such size that the direct bearing pressure per square foot on the ground shall not exceed 2 tons.

The following size foundations are recommended:

Size	At Top	Bottom
500 gal.	8″ x 24″	12″ x 36″
1000 gal.	8″ x 36″	20″ x 48″

The foundations shall be provided with foundation bolts extended approximately 2″ above the top of footing to fit holes provided in the steel supports of the tank.

The aboveground tank should be given one coat of white lacquer or aluminum paint to provide a proper heat reflecting surface. This coating should be maintained in good condition.

At the installation of the above-

ground system, the tank shall be electrically grounded. A grounding post consisting of a length of ¾" galvanized standard iron pipe, or equal, shall be driven into the ground adjacent to the tank. A No. 4 copper grounding wire shall be mechanically secured to the grounding post and to the tank. Now we are ready to purge.

When fueling a system for the first time make sure that all water and moisture has been removed. To purge the tank of entrapped air proceed as follows:

Method of Purging Tank

After connecting the filler hose to the storage system, open the shutoff valve on the truck tank slowly and allow a small amount of liquid to flow into the system. Then close the shutoff valve on the truck tank. (The vapor return hose must be equipped with a shut-off valve.) Connect the vapor return line to the system, but be sure that the shutoff valve on the end of the hose line is closed. The other end of the hose should not be attached to the truck tank.

It is very important that, when opening the valve on the end of the vapor return hose, it be opened slowly and not fully; if the excess flow check valve closes, it will be necessary to close the valve on the end of the hose, and wait until the check valve opens, then start venting again, being careful to open the hose valve slowly.

Be extremely careful that there are no open flames or fires in the vicinity and direct the discharging end of the hose away from buildings and up in the air with the wind. When it is evident that all of the air has been removed from the new tank (this may require from 5 to 10 minutes, depending upon the size of the tank), shut off the vapor return hose valve. Connect the vapor return hose to the vapor return connection on the truck tank. You are now ready to fill.

We all realize the important part the regulator plays in an LP-Gas system. We realize also that the moisture problem will stay with us until more effective means of fighting it are found. Those of you who have been in the gas industry a long time know what happens in pipelines, separator controls and other gas equipment.

Our industry is young and we are confronted with a few problems which will gradually be overcome when we begin to tackle them seriously. Water is one of the serious problems. As more and more dealers and installers and manufacturers get interested in the problem, some day we will have the answer.

J. W. Graves Buys Gas Firm In Ventura, Calif.

J. W. Graves has purchased the Ru-Al Gas Co., of Oxnard, Calif., from its former owner and founder, William Pedersen. The company has limited its sales to propane only. Fuel is supplied by Adams and Co., of Los Angeles.

Serving an area of about 50 miles in radius from Oxnard, the Ru-Al Gas organization has supplied bottled and tank gas to this rich farming area since 1935.

The new manager of the station will be Gilbert Stewart.

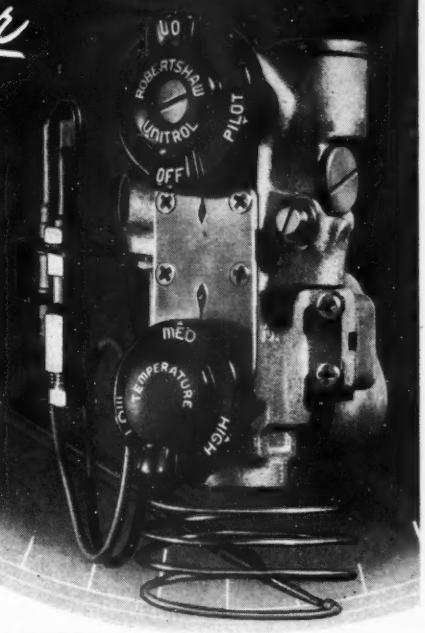
The New

ROBERTSHAW

UNITROL

GRAYSON

Space Heater Thermostat



A packaged unit combining thermostat, safety pilot, A, B and C controls in one assembly.

Installed with sensitive bulb in cold air return of floor furnace or space heater.

Provides accurate automatic control of room temperature without outside electrical connections.

100% shut off of both pilot and main burner plus snap-action thermostatic control.

Safer lighting—during pilot lighting operations gas cannot flow to main burner.

Thermo-magnetic type automatic pilot—no moving parts in combustion chamber.

Flexible capillary tubing makes installation simple and permits location of thermostat in most effective position.

Model shown is A-14 with ⅜" x 14" bulb.

Model A-15 with 3/16" x 65" bulb also available.

In home and industry, EVERYTHING'S UNDER CONTROL

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CONTROLS COMPANY YOUNGWOOD, PENNSYLVANIA

FULTON SYLPHON DIVISION
Knoxville, Tennessee

BRIDGEPORT THERMOSTAT DIVISION
Bridgeport, Connecticut

GRAYSON CONTROLS DIVISION
Lynwood, California

AMERICAN THERMOMETER DIVISION
St. Louis, Missouri

Butane-Powered Trucks Excel Diesels In Minnesota Iron Ore Hauling

BY A. C. BUTTERWORTH
Chief Mechanical Engineer, Pickands Mather & Co., Duluth, Minn.

MOST operators of open-pit mines in the Lake Superior iron ore district are quite familiar with the use of fuel oil in the heavy-duty diesel engines commonly used in truck-haulage service but some operators, including my own company, Pickands Mather, have had butane engine trucks in service for several years, and less is known of their operation.

One of the first installations of trucks for iron ore haulage was in 1939 at a deep open-pit mine on the Cuyuna Range. These superseded standard gauge steam haulage. Trucks then obtainable were

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A paper presented at the Annual Meeting AIME, New York, 1947, and reprinted here from "Mining and Metallurgy" with permission.

A Walter tractor with side dump trailer, owned by the Inter-State Iron Co., and powered by a Waukesha engine using butane fuel.

equipped with 150-hp diesel engines, and the speed of these units on an 8% grade would have been so slow, considering the depth of the pit, that plans for an all-truck haul out of the pit were rejected.

About this time one of the engine manufacturers brought out an automotive-type spark-ignition engine, using either gasoline or diesel fuel, rated at about 225 hp, and a truck manufacturer was found who was willing to step out in power and performance and build a fleet of trucks to meet speed requirements of 8 mph on 8% grade with a nominal 15-ton load. The first six units were built and placed in service in 1939. These engines were equipped with accessories to permit using regular diesel fuel oil with spark ignition, and were known as "Hesselman" engines.

Operation of the first fleet was so satisfactory that in the following year, 1940, three more open-pit mines on the Mesabi Range were changed over from standard gauge steam haulage to truck haulage, and the same type of trucks and engines were purchased.

We then decided to try the new fuel, popularly called butane though not the pure gas of that name. A decision was reached to try this fuel at another Cuyuna Range mine which was changed over from steam to truck haulage in 1941. These new trucks were of the same type as the former ones, and used the same engine, except that certain accessories were changed.

With this fuel, used at a higher compression ratio, the engine power was increased from 225 to 240 hp, with a corresponding improvement in the operating speed obtained by a change in the rear axle ratio.

The next step was to put a butane truck in the "Hesselman" fleet and vice versa, to obtain comparative performances and operating data, which resulted in changing over all Hesselman engines for butane operation, but this program was not entirely completed until 1944. However, another Mesabi Range mine was changed over in 1942 from steam to truck haulage, using the

same type of trucks and engines equipped for butane.

During all this time, no diesel automotive-type engine in regular production was available that would show comparable horsepower and performance, and since these truck-haulage operations involved long hauls on grades of 8% of more, diesel-powered trucks received scant consideration.

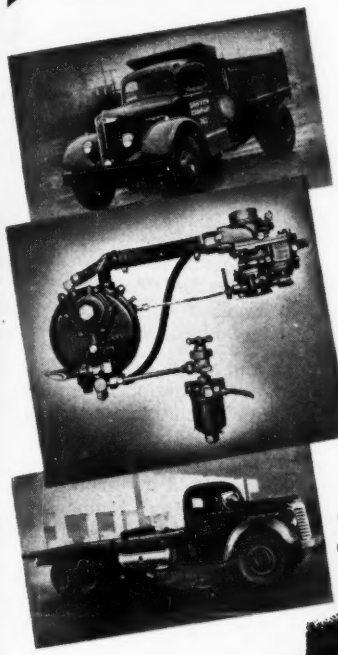
In 1943 an order was placed for 25 more trucks with butane engines for a new mine just being opened. Operating conditions were extremely bad owing to water, abrasive dirt, lack of service facilities, and untrained personnel. Nevertheless, this fleet gave a good account of itself, but with indications of a sharp rise in operating costs compared to the other fleets. In the meantime another engine manufacturer had put into trial service on the Mesabi Range a supercharged diesel engine rated at 275 hp, and another truck manufacturer had developed a truck suitable for this size of engine. One mine operator had successfully installed a fleet of these new heavy-duty diesel trucks in his mine where the length of haul and grades were comparable.

So when additional trucks were needed, an order was placed for five of these 275-hp diesel-powered units and three more identical trucks except equipped with a new

A 17-ton capacity Euclid truck powered by a 320-hp butane engine used at the Albany mine, Minnesota.

ENSIGN

BUTANE CARBURETION



Where Performance Counts

ENSIGN equipped trucks are today doing the toughest jobs. Getting there faster with the biggest pay loads at the least expense.

Results reported from thousands of ENSIGN installations in all parts of the country prove the practicability of Butane-Propane as an engine fuel—lower fuel costs, greatly reduced oil consumption and reduced engine maintenance.

ENSIGN, carburetor builders for over 36 years, offers a complete line of high-quality carburetion for every engine need. ENSIGN equipment sold and installed by qualified Ensign dealers is your assurance of economical and satisfactory performance on Butane-Propane.

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Write us for complete information. Our engineering staff is at your service.

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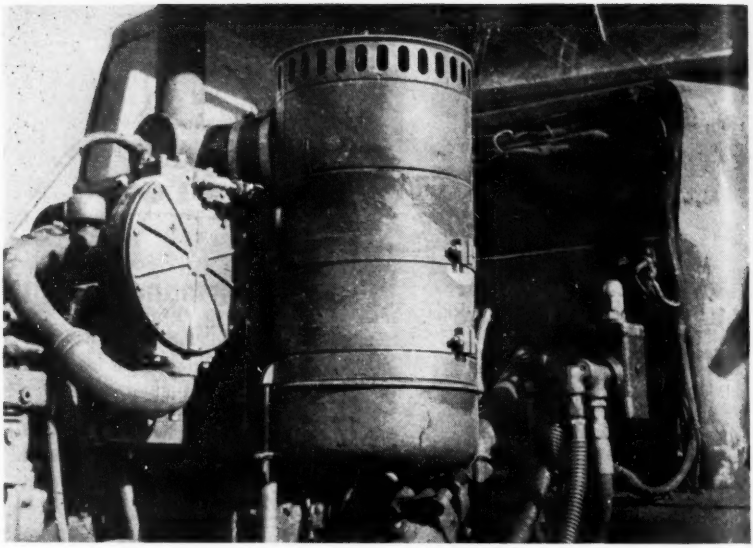


Ensign carburetor, heat exchanger, regulator and air cleaner used on 6-cylinder Waukesha engine using butane in open-pit, iron ore hauling.

type of butane engine rated at 300 hp. These two fleets have been in comparable service at the same property during the last two years, and presented a good opportunity to observe their respective performances and costs.

Basically, a diesel engine requires positive injection of the liquid fuel oil in the required amount and at the proper time so that the heat of compression as the piston approaches the cylinder head will ignite the charge for the explosion part of the cycle. Various methods are used to break up the fuel-oil charge into finely divided particles, and turbulence is developed by high velocity of the intake air due to restrictions and shape of the air passages and combustion chambers. Adjustments of the fuel pump are set for certain specific conditions of compression ratio, etc., and any factor which would materially lower the compression temperature would have an adverse effect on the engine performance.

It is also necessary to set the no-load or idling adjustment of the fuel pump so that a definite minimum amount of fuel goes through the pump and distributor in order to keep parts lubricated and prevent scoring.

In many types of diesel-engine service the amount of no-load or idling operation is relatively unim-

ALLAN C. BUTTERWORTH WAS born in Minneapolis in 1890. He attended the University of Minnesota and obtained his degree in electrical engineering in 1911. Following a year in the engineering department of the St. Paul Gas and Light Co. he became associated with the Oliver Iron Mining Co. on their electrical engineering staff. From 1922 to 1925 he served the Montreal Mining Co. as an electrical and mechanical engineer and then, in 1926, joined the Pickands Mather organization. Since 1939 he has been chief mechanical engineer for his company and has been working on the economic solution of their enormous ore-transportation problems.

portant, but with our ore-haulage trucks, where we have possibly a mile or more of downgrade empty travel back to the pit, an appreciable quantity of fuel oil is injected which is not required to produce power, and which results in rapid crankcase dilution.

This is accentuated by the extremes of engine temperature between the top of the grade with load and the bottom of the pit empty, and requires frequent draining of the crankcase and refilling with fresh lubricating oil, to prevent excessive engine wear. On this type of service we have determined by frequent oil sampling and tests that the diesel engine crankcases should be drained at intervals not to exceed sixty hours of service.

A butane engine is similar to an ordinary gasoline engine, except that the compression ratio is slightly higher (about seven to one) and the fuel, being a vapor instead of a liquid at atmospheric pressure, is supplied to the intake manifold through a "converter" or heat exchanger rather than through a conventional carbureter.

Since the fuel as supplied to the engine is a gas or vapor rather than a liquid, there is no crankcase dilution due to unburned fuel, and there is more uniform distribution of the gas to the various cylinders, resulting in a noticeably more uniform flow of power from the engine.

Our experience and tests made on oil samples indicate the proper time interval between crankcase changes for butane engines in our type of service to be 800 hours. An interesting side light on the above is the fact that in the butane engines the oil viscosity actually increases slightly with use instead of decreasing as it does in the diesel engines.

Diesel fuel oil is a fairly uniform produce and the oil in use does not vary materially from an average weight of 7.1 lb. per gal. Butane, or rather liquefied petroleum gas, is supplied to the user in varying densities, depending on the season of the year.

More Propane in Winter

In the summertime, with reasonably warm air temperatures, the product is a combination of a larger portion of heavier butane and a smaller portion of lighter and more volatile propane, but for cold-weather operation it is necessary to have a large proportion of propane in order to maintain a vapor pressure high enough so that the fuel will flow under pressure from the fuel tanks to the converter.

Butane weighs about 4.8 lb and propane about 4.2 lb per gal. The actual weight of the fuel will vary between these limits depending on

the proportions, and 4.5 lb per gallon is a fair year-round average.

The heat units in a pound of fuel oil and liquefied petroleum gas are substantially the same, and the fuel economy curves for diesel and butane engines are quite comparable. Experience has shown that the amount of fuel consumed by the two types or engines under similar service conditions is almost identical, so a comparison of fuel cost becomes a comparison of respective cost per pound. In the Lake Superior region the respective price structures result in a net per pound cost for fuel oil a little over half the cost of butane, and this comparison would hold for any given operation in this district.

Fuel Consumption Varies

Fuel consumption for engines of the same type and size varies widely when operating under different service requirements. The longer the haul and the higher the lift, the more horsepower-hours will be required per hour, with a corresponding increase in fuel consumption.

By empirical means, knowing the total amount of fuel used, the average fuel consumption in pounds per brake horsepower-hour can be derived. These values for our operations will generally fall between 0.50 and 0.65 lb of fuel, depending upon the variations in horsepower required by the physical conditions at the various mines.

These values obtained by empirical calculation show a remarkable agreement with the engine fuel economy test data for the same range of loads at an average speed of about 80% maximum governed speed. The full-load fuel economy is much better than the above figures, but the actual average output in our type of truck haulage service is only about 25% of maximum engine rating.

To offset the higher fuel cost of butane engines, the decreased cost of engine crankcase oil and filter changes can be applied because of much longer periods between oil drains, and credit can be taken for lowered engine repair costs due to the operation of cleaner engines with no crankcase dilution.

The tests made in 1941 on the Cuyuna Range indicated that this latter saving would be quite appreciable, and an immediate and noticeable reduction in engine maintenance costs was anticipated on changing over our original Hesselman engines for operation on butane. However, due to the wartime conditions of material and workmanship beyond our control, the expected savings were not realized.

Butane Excels Fuel Oil

Experience with Hesselman engines indicates the operating superiority of butane over fuel oil for those particular engines, but the operation of the two new similar fleets in service in the same pit under almost identical conditions has now for the first time given us an opportunity to make a direct comparison of butane and diesel-type engines.

Operations in 1945 were not quite as comparable as in 1946, and the 1945 records indicated a slightly lower cost per hour and per ton for the butane fleet. In 1946 with almost identical service conditions,

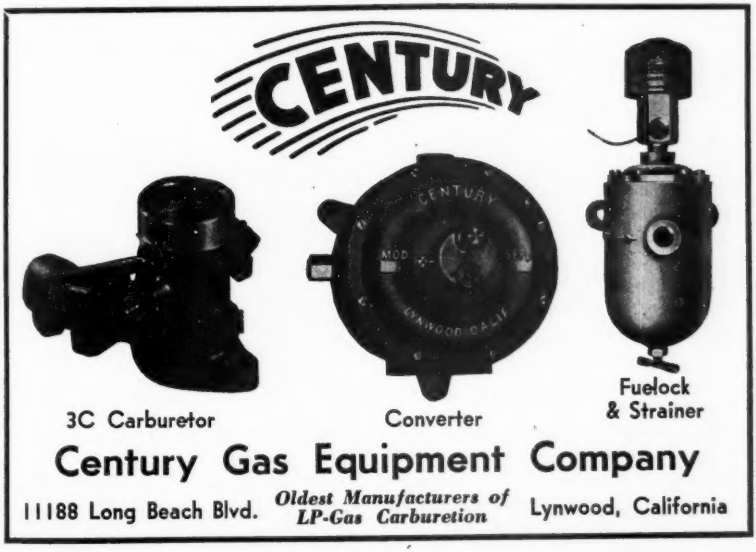
length of haul, vertical lift, and tons per hour, the costs per hour and per ton were almost identical for the two fleets.

Although a clear-cut confirmation on the cost sheet has not been obtained, we believe that for our type of operations, there is a definite advantage in the use of butane. The smoother engine performance and the additional engine power rating combine to give better truck operation with less shock to the transmission and rear axle.

Control of the butane engines seems to be easier than for the diesels, as there is a noticeable surging of the latter when being driven over rough or washboard roads. The butane engine will control the empty truck coming downgrade much better than the diesel, with less chance of engine overspeeding and resultant damage to valves.

The fewer oil drains required by the butane engines should increase their proportion of effective hauling time per truck. Also, the truck drivers seem to prefer the butane trucks over the diesel units; this may be on account of their greater power, or it may be because of the smell of fuel oil around the diesel engine.

The choice of butane has been governed largely by power requirements. A new fleet of trucks ordered for another Mesabi Range mine will be equipped with diesel engines of another type, and additional significant data will be



obtained after several years' operation.

When the various engine manufacturers can satisfactorily solve the problems of valves, bearings, pistons, rings, liners, crankshafts, etc., for a severe type of service, and can produce engines of the proper horsepower and torque characteristics which will normally run trucks for four, five, or six thousand hours between major overhauls, the choice of the most economical fuel to use can easily be solved.

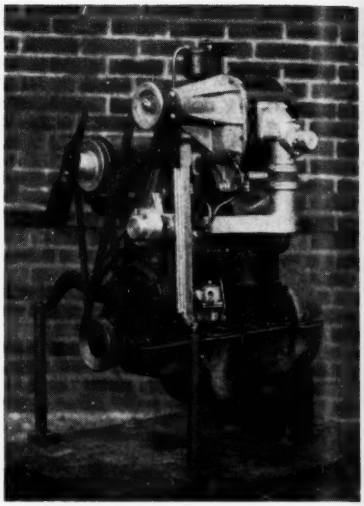
This goal has not yet been reached, but it may be significant to state that the original 1939 fleet with converted butane engines is still in operation at the same property with an average of over 22,000 hours on each truck, and with a cost per hour that compares favorably with average experience.

Engine Specialist Will Work In Pacific Northwest

Assignment of Glenn Cooper to the Pacific Northwest area to handle LP-Gas, gasoline, and natural gas engine service difficulties as a field service representative has been announced by the Hall-Scott Motor Co., Berkeley, Calif.

This move is in accordance with Hall-Scott's policy to get men trained in all phases of their engine and carburetion work, including LP-Gas, out into the field.

Mr. Cooper has had a number of years of factory experience and is well qualified to handle LP-Gas carburetion questions and problems that may arise in that territory.



From H. L. Benn, of Benn's Butane Gas Services, Mold, North Wales, comes this picture of a butane-burning engine upon which he has been experimenting with a Marshall supercharger, blowing out at 10 pounds pressure. He says the performance is amazing.

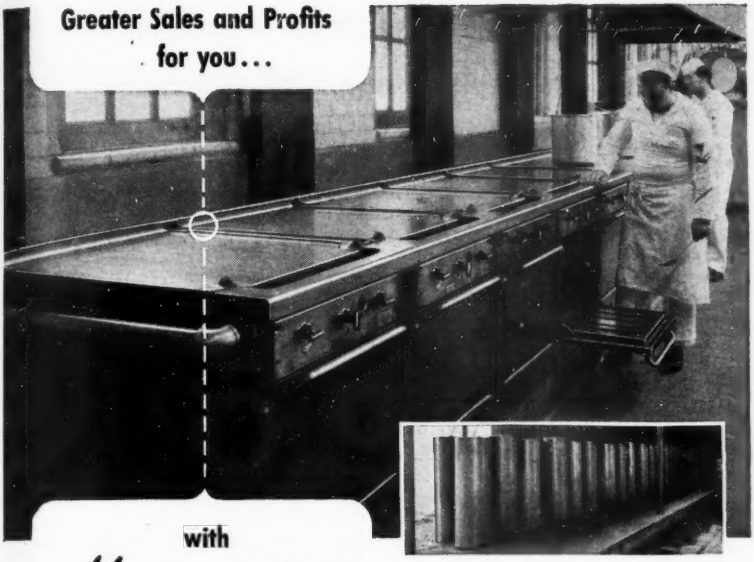
Huge Bulldozer Converted To Butane By LeTourneau

The R. G. LeTourneau Corp. has successfully adapted butane gas as a fuel for the world's biggest bulldozer. The machine takes about 40 gals. of gasoline an hour in its 12-cylinder, 750 hp engine, but when cheaper butane is used, only about 20 gals. are needed.

The firm said widespread adaptation of butane to heavy machinery could open up a new year-round market for butane.

Another of the company's machines is powered with an airplane engine converted to butane.

Greater Sales and Profits for you...

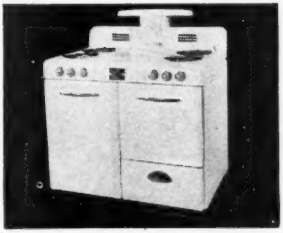


with

Magic Chef

Magic Chef installation and L. P. gas cylinders at the U. S. Naval Disciplinary Barracks, Harts Island, New York.

Heavy Duty Gas Cooking Equipment



2300 Series Magic Chef "CP" for LP Gas

This "matchless" Magic Chef brings your customers the convenience of oven, broiler and top burners that light automatically; no matches necessary. Now you can cash in on AGA's and Magic Chef's hard-hitting "CP" advertising campaigns. Write for details.

Cash in on this great market. There are Restaurants, Hotels Hospitals, Institutions, Schools, Motels and Roadside Stands in your area that offer you greater profits: 1. Extra profits from original equipment sales. 2. Extra profits from a greatly increased gas load. Magic Chef offers you the best opportunity to cash in on this market. Send for details—use coupon below.

Gentlemen: Please send me details on Magic Chef Heavy Duty cooking equipment.

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St. Louis 10, Missouri

Good Service and Careful Installations Build Profitable Business for Kansas Firm

THE Emery Gas & Electric Service, of Garden City, Kan., celebrated on June 12 almost 11 years in the LP-Gas business by opening a new and completely modern gas appliance store.

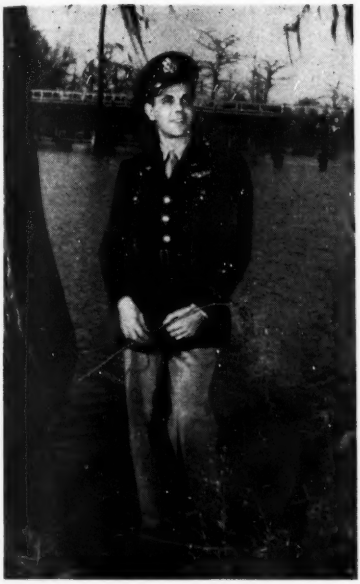
The business is operated by a father and son partnership between J. H. Emery, the senior member, and C. O. Emery, both of whom started in the business in 1937 by representing one of the first companies in Kansas to engage in the LP-Gas business. J. H. started with the firm as a salesman and later became sales manager. C. O. began as an installer, eventually working as a driver of a tank truck, serviceman, and salesman.

Therefore, the firm has the proper background in all phases of the business which undoubtedly has been a large factor in the progress the company has made.

In 1941, J. H. Emery and another son, Les Emery, who was also a salesman of gas systems and equipment, purchased a bob-tail tank truck which was used to fill the systems sold by them. This truck traveled all over the state of Kansas out of Wichita where the home office was located. Later Les was inducted into the service where he became a lieutenant in the Air Force as a navigator of a B24 stationed in Italy. His plane was shot up on a mission over Czechoslovakia and went down in the Adriatic Sea when attempting to return to its base in Italy.

In the same year, 1941, J. H. Emery moved to the "garden spot" of Kansas, Garden City, where he continued to sell merchandise which he purchased through a Wichita distributor and hired a driver to operate the truck. The policy of the firm was to always give the customer a square deal, good installations and good

New display room of Emery Gas & Electric Service, Garden City, Kan.



Les Emery at Selman Field, Louisiana, after he helped establish the Emery Gas & Electric Service. He was killed in action in World War II.

service. This policy paid off in increased business and tank customers until the name, "Emery Gas Service" became favorably known 100 miles in every direction from Garden City.

In 1943, a store was opened and stocked with LP-Gas appliances and two years later C. O. Emery joined the business with his father on a partnership basis. Since that time three additional trucks have been added and 26,000 gallons of storage to keep up with the expansion of operations. Thus the firm grew under the name of Emery Gas & Electric Service until larger and more modern quarters had to be secured to properly warehouse and display the additional merchandise being sold. The firm is now equipped to sell, service, and install anything that burns LP-Gas as well as electrical wiring and plumbing.

The new store is 120 ft long by 50 ft wide with a 40 ft by 50 ft showroom which has an all-glass front. The show room is brilliantly lighted with fluorescent lighting. Modern fixtures display all types of electrical household appliances and cooking ware. Three offices divide the showroom from the warehouse and shops in the rear of the building. The offices are 12 ft in depth, hous-

J. H. Emery and C. O. Emery standing before their bulk plant in Garden City, Kan.

ing the private offices of the two partners which are divided by a 6 ft entryway to move appliances from the warehouse off and on the floor. In the entryway are automotive cabinets lining the walls in which all types of LP-Gas fittings and connections are kept. Off to the side of C. O. Emery's office is the clerical office.

At the present time a sheet metal shop is being set up in the rear of the offices. James Crellin, a qualified heating consultant, is in charge of forced air heating and cooling engineering and installations along with Jim Unger who is in charge of the sheet metal shop. Mr. Crellin, Mr. Unger, and Emery Gas & Electric Service have entered into a partnership arrangement on the forced air systems.

The firm at present operates three bob-tail transports and two pickups and one 1½-ton flat-bed winch truck. They service approximately 600 bulk tank accounts and 500 bottled gas customers. A year from now they expect to have doubled this equipment and number of customers.

The motto of the firm is: "We service everything we sell." They are sincere in backing up that motto which has cost them plenty of money, but they believe every cent they have spent in making every customer a satisfied customer has paid them big dividends.

Institute Will Discuss Enamel Drying Processes Oct. 13-15

The results of an industry-wide survey of drying practices in porcelain enameling plants will be reported to the Tenth Annual Forum of the Porcelain Enamel Institute by George N. Tuttle, Benjamin Electric Manuacturing Co. Mr. Tuttle's report is scheduled for the Friday morning session of the three-day P.E.I. Forum to be held Oct. 13-15 at the University of Illinois.

The survey of drying practices was undertaken by the Institute's Forum committee because relatively little up-to-date, practical data on the subject are available to the enameling shop man.

Fred Johnson Made District Manager of Suburban Propane

Fred Johnson, of North Plainsfield, has been promoted to district manager of the Whippany, N. J., district of Suburban Propane Gas Corp. This is announced by Mark Anton, corporation president.

FRED JOHNSON

Mr. Johnson has been sales manager of the corporation's Bound Brook, N. J., office. He succeeds Charles Burnham, who has been appointed manager of the Suburban district in Derby, Conn.

Franchise Granted for Town Plant in Tijuana, Mexico

Villalvoza Bros. have been awarded the gas franchise for the City of Tijuana, Baja California, and are preparing plans and specifications for the construction of a distribution system.

At present, the town is served by approximately 5000 bottled gas and tank installations.

Harold W. Wickstrom, of Los Angeles, has been retained as consulting engineer to assist in the development of the design of the plant and distribution system.

Type MC Regulator with 2nd Type H Secondary Regulator. Capacity up to 6600 cu. ft. of Vapor per hour.

DEPENDABLE SERVICE

Reliance Regulators assure absolute control of steady outlet pressure to L-P gas users. They are safeguarded by a safety seal and installed with automatic control of multiple cylinder assemblies. Two-step reduction eliminates possibility of high pressures getting into appliances.

AMERICAN METERS

RELIANCE REGULATORS

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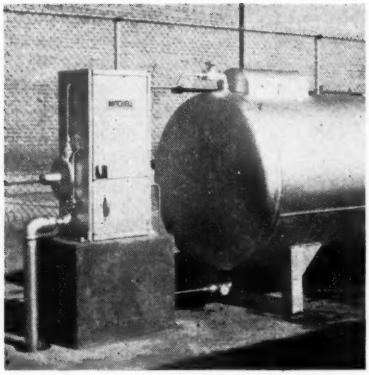
PRODUCTS



Industrial Vaporizer

John E. Mitchell Co., Dallas, Texas.

Models: Industrial Vaporizer No. 12, 30, 70, and 140.

Application: For use with above or underground storage tanks, the vaporizer is designed for the medium and larger service demands, varying from 12 gals. to 140 gals. per hour.

Description: The vaporizer is connected to the storage tank with both liquid and vapor lines. A float-actuated valve known as the surplus flow valve operates in the vapor line. This valve is normally closed. It opens only if and when the demand for gas temporarily exceeds the capacity of the vaporizer. The action of this valve permits the vaporizer to supply either generated gas from the vaporizer, or storage gas from the top of the tank, or both at the same time. Its action is automatic and precisely responsive to the gas demand.

A patented principle is incorporated in the vaporizer to prevent excessive pressures building up. In addition, the vaporizer is equipped with an automatic anti-flow valve which prevents any liquid from going out of the vaporizer into the service line.

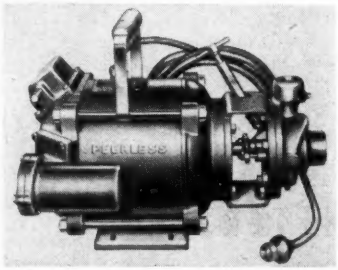
Portable Pump

Peerless Pump Div., Food Machinery Corp., 301 W. Avenue 26, Los Angeles.

Model: Type MXT.

Application: A bottle - charging pump for LP-Gas service, it may be used at bulk plants for transferring liquid from large to small containers, or can be carried on truck for transfer from tank to bottles at customers' premises.

Description: Type MXT has a stated capacity of filling a 100-lb. cylinder in 6 minutes. It is a complete unibuilt assembly equipped with a car-



rying handle and 15 ft. of extension cord. Designed for operation on 110 volt, single phase, 60 cycle house current, it is equipped with a Underwriters'-approved ¾ hp, explosion-proof, electric motor and switch for Class I, Group D applications.

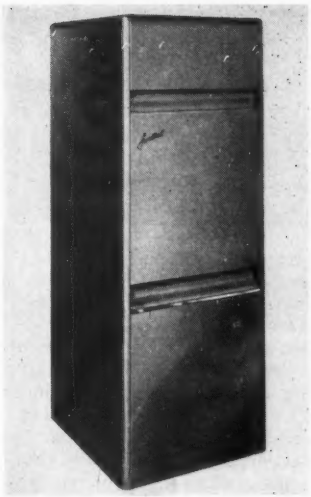
The pump utilizes a vane type impeller, has a rated capacity of 4 gpm at 3500 rpm and develops differential pressures up to 40 lbs. Pump discharge has standard 1 in. pipe tap; pump suction has 1¼ in. pipe tap.

Cooking Range

James Graham Mfg. Co., Newark, Calif.

Model: Wedgewood "Gold Star" No. 8648.

Description: Available with six top burners or four burners and chrome "Griddle-in-the-Middle." Also two full-size baking ovens are capable of simultaneous operation. There are also two "flavor-seal" broilers. Other features are controlled-action top burners, unit cooking top, recessed control panel, and folding cover top. The range occupies a floor space 40 in. x 36 in. x 26¾ in.; weight is 430 lbs.



Winter Air Conditioner

Surface Combustion Corp., Toledo, Ohio.

Model: Janitrol.

Description: Two horizontal cabinet ventilating scoops, with convex surfaces inside the recesses which direct and accelerate the ventilating air over all the controls, have been introduced.

The redesigned steel burner chassis is easily removable, as are both the burner ribbons and burner runner-ribbons. Each burner has its own non-linting primary air shutter adjustment. The top plate flue collector has also been redesigned for easier removal.

A new type turbulator has been added which is suspended from the top of the heat exchanger tube and is fabricated from a special type heat-resistant alloy steel. The combination of this combustion and heat transfer

principle is well suited for low air volume operation which is encountered when installations are made for continuous air circulation.

The six sizes of conditioners in the new line range from 60,000 Btu input rating to 180,000 Btu, with the four smaller sizes completely factory assembled. Uniform height and depth are retained in all units, the capacity size being attained by increasing the width.

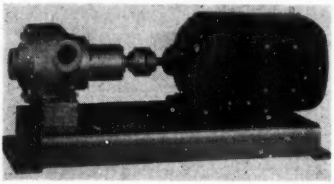
Other features include a new plug-in self-positioning pilot, relocation of the fan and limit control, cushioned suspension of the blower assembly, and enclosure of all controls and component parts.

Liquid Transfer Pumps

Smith Precision Products Co., 1135 Mission St., South Pasadena, Calif.

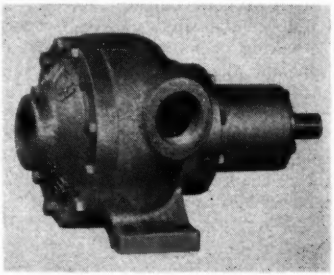
Models: TC-1044-H and MC-1044-H.

Description: This company has developed two new models of butane-propane pumps in the 35 gallon-per-minute capacity range. The truck pump, Model TC-1044-H, has a transfer capacity of 20 gpm. at 500 rpm., but when installed with a 2" excess flow valve and 2" inlet piping it may be safely run at 900 rpm. At this higher speed the transfer capacity is increased to 35 gpm. This pump is recommended for small trucks, on runs where large deliveries are sometimes required.



The corresponding bulk plant pump, Model MC-1044-H, is rated at 35 gpm. transfer capacity at 1800 rpm. direct connected, electric motor speed. This unit should also have 2" inlet piping. It may be supplied complete with base, coupling, and 1½, 2, or 3 hp. explosion-proof electric motor, depending upon service requirements.

Both new pumps have the same



mounting dimensions as the 20 gpm. T-1044, TC-1044, M-1044 and MC-1044 units, and are thus interchangeable with them. Light weight (40 lbs.), small size (approximately 7" width and height), and multiple outlet ports make these pumps extremely easy to install.

The new Smith self-adjusting packing is an outstanding feature of these new models. This packing, recently made available for all new models of Smith butane-propane

Only the New

GARLAND

Gives Such Flexibility of Cooking Top Heat

Front-firing does it! Seven individually controlled burners give the chef any heat he wants—*where* he wants it—*when* he wants it. Hot top takes four large stock pots at one time.

NEW GARLAND
No. 45-29-CX

The *LEADER* forges farther ahead!

Twenty-two new features include *new* Flo-line Design, *new* larger Even-Temp Oven, *new* Loop Style Oven Burner, *new* system of Flue Ventilation, *new* Dura-Built Oven Heat Control, *new* type Under-Lock High Shelf and *new* Co-Designed Matching Attachments. The new Garland has been introduced to your customers by *double page spreads of national advertising.* Sell Garland—for volume profits.

All models available in stainless steel and for use with manufactured, natural or L-P gases.

GARLAND*

THE TREND IS TO **GAS**
FOR ALL COMMERCIAL COOKING

Heavy Duty Ranges • Restaurant Ranges • Broilers • Deep Fat Fryers • Toasters
Roasting Ovens • Griddles • Counter Griddles

PRODUCTS OF DETROIT-MICHIGAN STOVE CO., DETROIT 31, MICHIGAN

*REG. U. S. PAT. OFF.

pumps, requires no lubrication, no servicing and no tightening of the packing gland during its long service life.

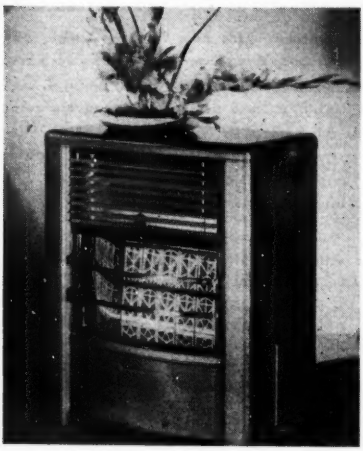
The self-adjusting packing has already been proven to last much longer than conventional packing, and its absolutely leak-proof construction is a great contribution to the safety and efficiency of LP-Gas pumps. The new packing is easy to replace, taking only about half the time required when renewing ordinary pump packing.

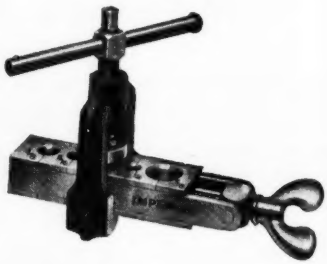
Space Heater

Dearborn Stove Co., Dallas Texas.

Model: Saf-T-Cabinet No. DRC-35.

Description: The Dearborn "Saf-T-Cabinet" line has a "siphon" chassis, which draws cool air in at the floor level, warms it in series of baffle flues, and sends it out and down with a force like that of a fan-equipped heater. The same feature is claimed to keep the outside walls of the cabinet cool, even when heat has been on for a long period. Books, flowers, etc., are safe on its console top, which does not heat up enough to harm them. Btu rating: 35,000. Dimensions: 13 in. x 22 in. x 28 in. Number radiants: 6.





Flaring Tool

Imperial Brass Manufacturing Co., 1200 W. Harrison St., Chicago.

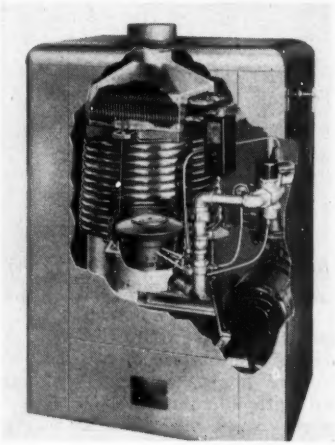
Model: 300-F Hi-Duty.

Description: The tool flares soft copper, brass and aluminum tubing for SAE flare joints in OD sizes of ¼, 5/16, ⅜, ½, and ⅝ in. The manufacturer claims that faster operation, better flares, greater compactness and elimination of scoring of the tubing are among the attributes of this new tool.

In place of the usual bar, it has a new die holder with sliding dies for clamping the tubing. There is only one thumb screw to tighten. Friction is reduced through the use of a ball-thrust bearing while yoke slides directly over end of die holder without twisting or turning into position over tubing to be flared.

Extra depth, smooth surface die blocks which hold the tubing securely eliminate the scoring which is considered to be an important advantage

in making extra strength flare joints. The die assembly is made of heat-treated steel and the yoke is made of forged steel.



Hot Water Boiler

A. O. Smith Corp., Kankakee, Ill.

Model: Smith-Burkay water boiler.

Application: For small home heating systems.

Description: This forced-circulation, gas-fired boiler is claimed to be the first packaged boiler for 100% non-ferrous, small home heating systems. All parts in contact with water are copper, brass, or bronze. The heat exchanger is lead alloy-coated for additional protection against the products of combustion. The design eliminates excessive bulk in the heat transfer area. The low water content (8 pints) and copper-finned heat exchanger and counter-flow principle provides instant response to heat demand. In a matter of seconds, water is said to be sent to all parts of a heating system. The Burkay boiler carries the AGA seal of approval. It is delivered completely packaged, with all controls, ready to install. The boiler is manufactured in two models of variant Btu capacity, both of which are available for LP-Gas.

Safety Relief Valve

Selwyn-Landers Co., 4709 East Washington Blvd., Los Angeles.

Model: S-L 431 and S-L P431.

Application: Designed for installation on ASME U-68 or U-69 or API-ASME LP-Gas storage containers as covered by NBFU Pamphlet No. 58.

Description: These new S-L safety valves are listed by Underwriters' Laboratories, Inc., under their label service. A special feature of the valves is the unique design of the poppet. Being machined from brass bar stock, it is not readily subject to corrosion. The four rectangular openings are machined in the poppet to allow the gas to escape when valve

opens. The Hycar seat disc is held in the poppet by a brass retainer and machine screw, thus assuring permanent position in the poppet.

Another special feature is the tamper-free method of sealing a pressure setting once it is properly adjusted. The label is attached to the valve by drive screws which extend into the spring retainer. Any effort to change the pressure setting of a properly labeled valve will necessitate removal of the label.

The valves are provided with ¾" male taper pipe threads for installation in tanks. They differ in size only in that the body of the S-L P431 is 15/32" longer than S-L 431. This allows either a stack pipe-away or an adaptor to be threaded into the body in installations where the relief valve discharge must be vented. The valve bodies are machined from brass hexagonal bar stock, which permits a wrench grip section for easy installation.

A complete range of start-to-discharges pressure settings is available at excellent capacity rates of discharge in cubic feet per minute.

The UL listed stack type pipe-away can be supplied for any required length from 3" to 9", inclusive. A rain cap with suitable chain is also available.

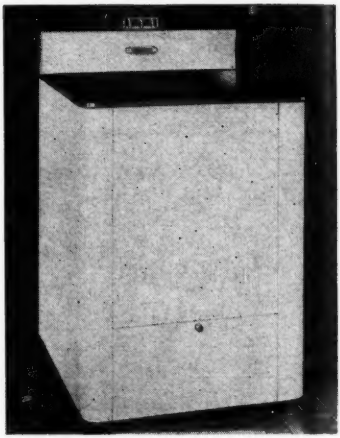
Table-Top Water Heater

Handley-Brown Heater Co., Jackson, Mich.

Model: Table-Top.

Application: This water heater has been engineered for modern kitchen and utility room design.

Description: The water heater is finished in white baked enamel with a reversible black linoleum top should it be desired to use linoleum or other



material of a different color. The heater is designed to conform with average kitchen counter top height and with standard cabinet sizes. Its height is 36 in., width 24 in., and depth 25 in.

Side heat application uses both direct and radiant heating, making possible the use of a 30-gal. storage tank with low input burner that need not be vented to the chimney, thus alowing flush-to-wall installation. A built-in draft diverter which facilitates connection to outside vent where local regulations so require is standard equipment.

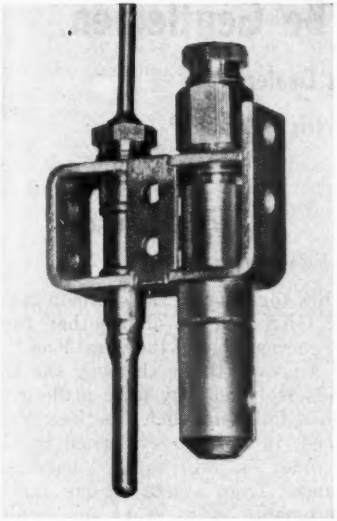
Radiant heating is utilized as the heat enters properly sized brass tubes above the combustion chamber.

Pilot Burners

Milwaukee Gas Specialty Co., Milwaukee, Wis.

Model: Annulair.

Application: Three types are offered, namely, type B for horizontal



low consumption gas applications; type C for vertical low consumption; type D for larger appliances and burners.

Description: Several advantages are claimed by the manufacturer such as stable pilot flame under wide range of gas pressures; no flash-back —providing correct orifice is used; no burning at the orifice; flame unaffected by high ambient temperatures; dual orifice replaceable for any type of fuel gas; and elimination of air shutters.

Domestic Water Pump

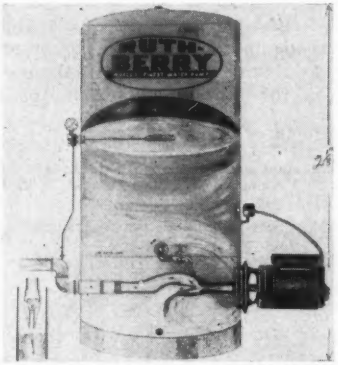
Ellis Butane Equipment Co., Exclusive Sales Agents, 4501 Greely St., Houston, Texas.

Model: Ruth-Berry.

Application: Shallow and deep well water pumps for domestic and small-load commercial use.

Description: Pump is designed to never lose its prime and because of radical changes in pump design it is guaranteed by manufacturers to never freeze. Using a jet principle which is incorporated and built into the tank itself, the unit requires less space and eliminates the necessity for extra fittings required by conventional type pumps. Equipped with the finest of pressure controls, the pump is so designed that if the water level should ever be pulled below the foot valve, the pump will continue to operate building up air pressure, causing the pressure switch to shut off the motor.

The unit is equipped with a 42-gallon galvanized storage tank, but can be produced with larger size storage tanks if desired. The shallow well motor operates to a depth of 30 feet and the deep well motor, employing a two-line jet system, will deliver



ample quantities of water from depths as low as 100 feet. Shallow well motors come in ¼ hp, ⅓ hp, ½ hp. The deep well pump comes equipped with ½ hp motor.

"Competitors May Be Gentlemen,"

Says Arkansas Dealer, But How About Electric Salesmen?

By ZOE JOHNSON

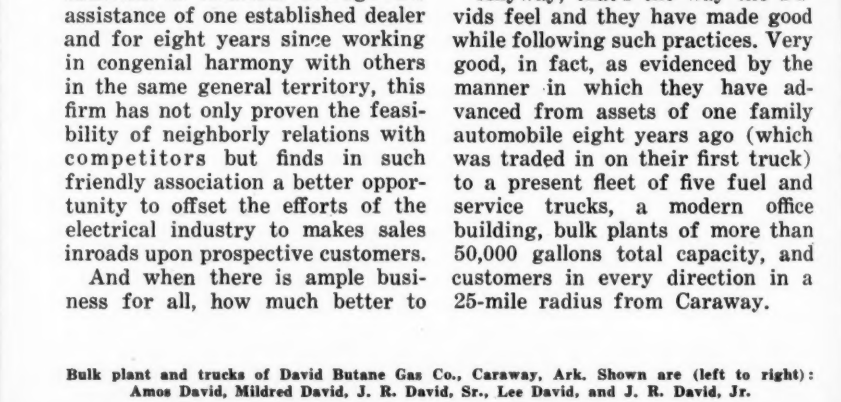
CAN LP-Gas dealers be competitors and remain friends?

The answer is definitely *yes* if, as a criterion, one takes the record of the David Sales & Service Co., of Caraway, Arkansas. Practically launched in business through the assistance of one established dealer and for eight years since working in congenial harmony with others in the same general territory, this firm has not only proven the feasibility of neighborly relations with competitors but finds in such friendly association a better opportunity to offset the efforts of the electrical industry to makes sales inroads upon prospective customers.

And when there is ample business for all, how much better to work together in the common cause of GAS than to allow other fuels to encroach upon the rural load?

Anyway, that's the way the Davids feel and they have made good while following such practices. Very good, in fact, as evidenced by the manner in which they have advanced from assets of one family automobile eight years ago (which was traded in on their first truck) to a present fleet of five fuel and service trucks, a modern office building, bulk plants of more than 50,000 gallons total capacity, and customers in every direction in a 25-mile radius from Caraway.

Bulk plant and trucks of David Butane Gas Co., Caraway, Ark. Shown are (left to right): Amos David, Mildred David, J. R. David, Sr., Lee David, and J. R. David, Jr.



There are three Davids—J. R., Sr., and his two sons, Amos and J. R., Jr. In 1940, when they entered the butane business, their only and scarcely tangible assets, in addition to the aforementioned family car, were vision, self-confidence, the incentive to build a business for themselves and a capacity to cooperate with other dealers for the good of the industry.

Leonard Warden, West Memphis, Ark., was the first dealer to extend a helping hand. Out of his long experience, he showed them how to properly set up their business and begin operations on a safe basis, and Mr. Warden filled their first delivery truck with 500 gallons of gas before they even had a bulk plant. Incidentally, this truck had the tank mounted crosswise so part of the truck could be used for installation and service equipment.

Within the first 12 months a storage plant had been installed and a small building, later made into a filling station, served as an office. Today's office and large appliance display room are housed in a new brick building.

The Davids confine their operations to a 25-mile radius around Caraway so that transportation costs can be kept at a minimum. The concentration saves in delivery costs and adds to their profits; it gives quick service to customers and avoids the headaches that go with a widely scattered customer field.

In the heavy delivery territory they have built another bulk plant to enable their drivers to reload fuel without returning to the home plant, and thus never drive more than 50 miles on a given day.

Amos David

To outsmart electrical salesmen is the ambition of the Davids, particularly Amos. Nothing hurts him as much as to get an order to install a butane heating system, for instance, in a home and find an electric range in the kitchen. Amos tears his hair and says, "How did I miss this one?" Then he goes out and works harder than ever, especially in the territory close to the home office where there is often a tendency to postpone calls in order to cover the supposed greener fields farther away.

The Davids never worry about the business other butane dealers may get within what they call their extended field of action, but actually give constructive assistance if such will save the day for a gas

Members of the David family in front of their office building and delivery trucks. Left to right—Amos and wife; J. R., Sr.; J. R. Jr., and wife.

installation. This attitude was emphasized by Amos David when he recently explained his company's position to dealers at the Arkansas Butane Dealers Assn. meeting.

"The butane gas industry," he said, "is the business that affords the best way of living to the greatest part of the rural population of our country and is a fundamental and constructive force in making better the whole of the 'American Way of Life.' Some of the finest people in the United States are in the butane-propane business.

"Many of us started the struggle without capital, storage plants, or other facilities to operate our business. But for the men already in the business who were big enough to help and to share, we would never have climbed the hill... We guarantee that in most cases you will find your so-called competitor a gentleman and one who will cooperate with you when given a chance. They are neighbor-dealers and we are all working toward the same goal—bringing the greatest good to the greatest number of Americans.

"The first constructive relationship in the butane industry begins with dealers, one to another . . . We want the rural public talking butane gas—not electricity. Think it over, gentlemen. Get acquainted with your neighbor. Establish a friendly relation with him and let us really promote our business together.

"The first objective in customer-relations is to operate successfully your own back yard. Thus, you can give the very best customer service at a minimum of cost. In a small area you can also offer appliance service at lower cost and fill the orders more quickly.

"In all customer-dealer relations there is one straight-edge measurement that s h a v e s the unpleasant bumps out of all business transactions—that old, oft-talked-of rule of treating the other fellow as you would want to be treated. It really does work—both ways. Stand on your side of the counter a while; then walk around and stand on the customer's side. Remember how you felt the times that you needed the other fellow to go a little easy on you. . .

"We assure you that customers receiving this kind of service are telling their neighbors about butane and are the best sales people that can be had and without pay from you. You need not worry about your electric competitor. And also remember that when your neighbor gas dealer makes a sale you and he are working toward the same goal—service of butane.

"We suggest getting acquainted with and establishing proper relations with your gas-dealer-neighbor and maintaining proper dealer-customer relations. With this we see a greater 'American Way of Life' and a very bright future in the LP-Gas business."

AN 18,000 B.T.U. SPACE HEATER OCCUPIES ONLY 9 INCH CIRCLE OF FLOOR SPACE!

Here's the latest, hottest space heater on the market. The Panelray "F" gives the same healthful infra-red heat at body height as the standard Panelray, but is mounted on the floor instead of being installed in the wall. It's approved by A.G.A., as either a vented or non-vented heater, for all types of gases.

The sales features are tremendous—occupies little floor space, easy to install, easy to vent, low in cost, inexpensive to operate. Set a live Panelray "F" on your floor and turn it on for your prospects. They will understand why Mr. J. B., San Gabriel, Calif., says: "If home owners knew exactly the merits of this heater, they would never use any other. The even distribution of heat all over the room is a great factor in its favor."

DAY & NIGHT

MANUFACTURING COMPANY

Monrovia, California
One of the Dresser Industries

THE TRADE

During the last week in July nearly 80 "Janitrol" sales representatives from factory branch offices and from distributors' organizations convened at Bedford Springs, Pa., for a three-day sales meeting. This was the first general sales meeting of the **Surface Combustion Corp.** Janitrol heating division to be held since 1940. Theme and keynote of the entire sales meeting was "Something Old . . . Something New." "Something Old" being a review of Janitrol's progress in the development of gas heating equipment for the past 30 years, while "Something New" pertained to the introduction of new equipment.

The meeting was conducted by Eugene A. Weaver, general sales manager of the Janitrol space heating division. Frank H. Adams, president of Surface Combustion Corp., and C. B. Phillips, vice president and general sales manager, made key speeches.

William M. Hepzurn, vice president and chief engineer, during a luncheon meeting, told of early experiences, and J. I. Trimble, manager of Columbus Engineering, unveiled the new Janitrol winter air conditioner.

Mike McCormick, slugging outfielder of the Boston Braves, won himself an apartment model Florence gas range by having the highest batting average for the day in the recent "Gardner Day at Brave's Field." Mike had a perfect day at the plate with 2 doubles and 2 singles in 4 trips, and is being congratulated by Orville B. Denison, secretary-manager of the Gardner, Mass., Chamber of Commerce.

The Coleman Co., Inc., has purchased the La Porte, Ind., factory of Hoosier Industries, Inc., it is announced by Clarence Coleman, vice president in charge of production.

A complete line of automatic water heaters in both oil and gas-burning models will be produced there, Coleman said.

Lee P. Corsbie, president of Hoosier Industries, has been retained as general manager of the Indiana plant.

In addition to the La Porte factory, Coleman operates two manufacturing plants in Wichita and one in Toronto, Canada. Sales offices are maintained in Wichita, Philadelphia, Chicago, Los Angeles, Honolulu, T. H.; Toronto, and London, England.

With an eye to the market potential of the Dallas-Fort Worth and central Texas area, the **Bryant Heater Co.** has appointed Karl W. Schick the Bryant distributor for Dallas, Texas.

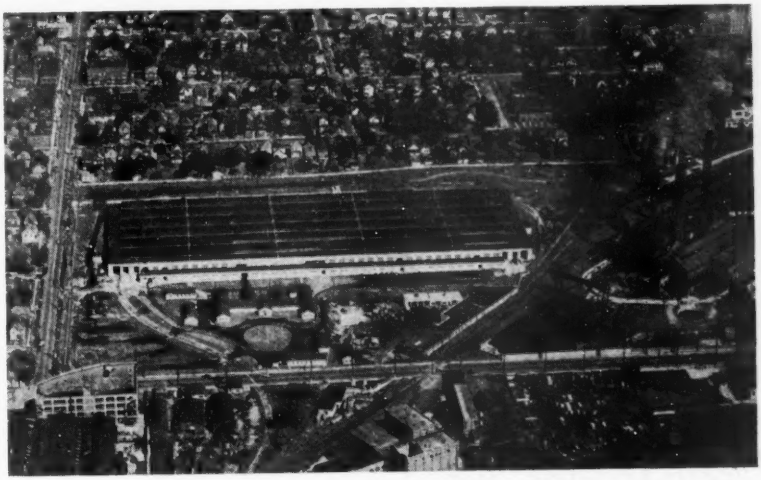
KARL W. SCHICK

Mr. Shick has a long record in selling heating equipment of all types. For some time he had been associated with the Minneapolis-Honeywell Regulator Co. in various capacities. Recently he had been regional manager of the southwest division of Minneapolis-Honeywell with his headquarters in Dallas.

Located at 1123 N. Haskell Ave., Dallas, Texas, Mr. Schick will maintain a complete line of Bryant gas heating equipment.

On July 7, over 40 sales representatives of the Empire Stove Co. from all parts of the United States gathered at the DeSoto hotel in St. Louis for the annual sales convention. The convention, arranged and conducted by L. A. Brand, vice president of the company, marked the postwar re-entry of the **Empire Stove Co.** of Belleville, Ill., into the cooking appliance field. Edward Kaufman, Empire president, welcomed the representatives.

The entire gas floor furnace line was displayed at the convention with a companion line of commercial gas cooking equipment manufactured by the Morley Manufacturing Co., of



This is the new Indianapolis home of the Peerless Pump Division of the Food Machinery Corp. The Fall Creek Ordnance Works of the U. S. Government was formerly located here. The full line of Peerless pumps will be produced here.

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STANDARDIZE WITH •

FLARON
TRADE MARK

BRASS FITTINGS
AND
ACCESSORIES

The recommended fitting for

L-P GAS
PLUMBING
REFRIGERATION
OIL INSTALLATIONS

We are proud to announce our affiliation with the following nationally known concerns and their products as distributors:

Rector Well Equip.
Gas Specialty
Odin Stove Mfg. Co.
Papco Company
American Gas Machine
Mollenbrock & Wilke
Webb Mfg. Co.
Hudson-Hart
Tanner Mfg. Co.
General Hdwe. Mfg. Co.
M. M. Hedges Mfg. Co.
Caloric Stove Corp.
Meynell Mfg. Co.
American Thermometer Co.

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Write for our illustrated
"FLARON"
price list

Jobbers in principal cities

SCHAAF BROS., INC.
OSBORN, OHIO

Mascoutah, Ill. Cutaway models of the floor furnace and the circulator heater were shown.

The first product to be introduced was a new shallow floor furnace. By using the new horizontal type "Thriftmatic" burner in the floor furnace, its height has been reduced to 24 inches.

The most interesting moment of the convention proved to be the unveiling of the new Empire gas range, a full sized 42-inch gas range with many new exclusive features.

W. M. WATTMAN

Paul R. Smith, president of **Anco Manufacturing and Supply Co.**, Tulsa, Okla., has announced the appointment of T. C. Shaw as vice president in charge of special sales division, and the election of two new officers, W. M. Wattman as vice president, and Howard I. Fidler, secretary and assistant treasurer of the company.

After Mr. Wattman was discharged from the Army Air Corps as a major in 1946, he served as chief engineer for the Anco organization. Shortly afterward he was made assistant to the vice president, and served in this capacity until August of this year.

Mr. Fidler has made his home in Tulsa since 1918, and has been with Anco for two years, having previously served as auditor and credit manager of two Tulsa oil companies.

Joseph F. Bourn, architectural engineer of Dallas, Texas, has been appointed Southwestern sales repre-

ANOTHER *O'Keefe & Merritt* GAS RANGE

Now five L-P Models—more coming!

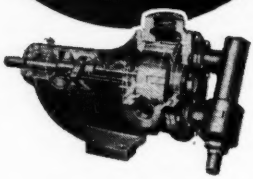
This new model will add to O'Keefe & Merritt's reputation for giving the most features for the least money. Superb modern styling—plus a hinged top that makes cleaning surprisingly easy—will make this small range first choice in its field!

Write today for details on O'Keefe & Merritt's complete line

O'KEEFE & MERRITT CO. 3700 E. OLYMPIC BLVD., LOS ANGELES 23, CALIF.

VIKING

The Rotary Pump Built to Create and Retain your CONFIDENCE!



The building of a piece of equipment to win your confidence is the aim and purpose of every Viking that leaves the factory.

Confidence can only be WON and RETAINED with a pump that will actually go out and do the job it is sold to do.

Look to Viking for the pump that builds confidence. A self-priming, simply and ruggedly constructed pump suitable for delivery against discharge pressures.

Write today for free bulletin 2300B. It will be sent immediately.

See Our Catalog in SWEETS

VIKING PUMP COMPANY
Cedar Falls, Iowa

sentative for the home heating equipment division of **Stewart-Warner Corp.**, it is announced by Key Ryan, in charge of "South Wind" home heater sales.

From his Dallas headquarters Mr. Bourn will be responsible for distributor contacts in Texas, Oklahoma, Arkansas, Louisiana and New Mexico. His appointment is the first step in distribution expansion plans for the South Wind gas-burning home heater, heretofore marketed only in two test markets in Texas.

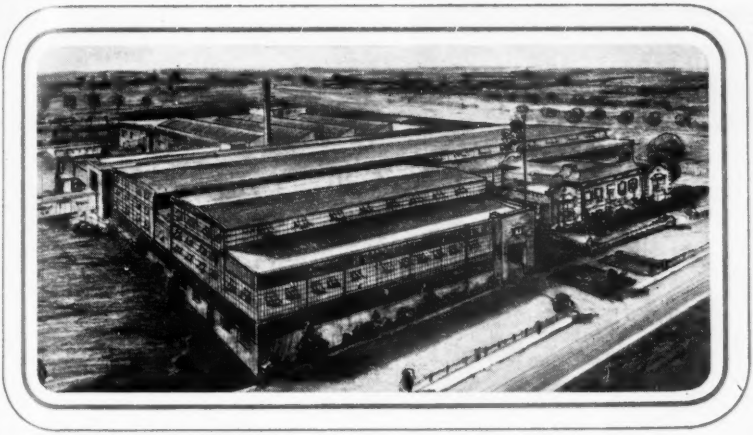
The continued expansion of **Phillips Petroleum Co.'s** sales of liquefied petroleum gas has occasioned several promotions in the Philgas Division of the company's sales department.

BILL HAGLER

C. R. "Chuck" Dougherty has been appointed manager of wholesale sales of liquefied petroleum gas and has been transferred from Amarillo, Texas, to the Bartlesville, Okla. office. Mr. Dougherty was formerly assistant division manager at Amarillo, in charge of Philgas sales and prior to that was in Detroit with the company.

W. C. "Bill" Hagler, formerly assistant division manager in charge of Philgas sales at the Denver, Colo., office, will return to his native Texas to assume Mr. Dougherty's duties at Amarillo.

At the other extreme of Philipps' marketing area, Carstens Slack has been promoted to assistant division manager of the Minneapolis sales department office, in charge of Philgas



60 Years of Experienced KNOW-HOW

STAND BEHIND THESE TWO NAMES!

JEMCO — *Hearth Glo* **GAS HEATERS**

From a tiny beginning in 1888, our plant has grown to the huge facilities pictured above. The plant occupies over 130,000 square feet of floor space — standing on more than 7 acres of land.

In this factory, we make dependable, efficient JEMCO Stove Pipe, Wood Heaters, and Accessories, as well as HEARTH GLO Gas Heaters.

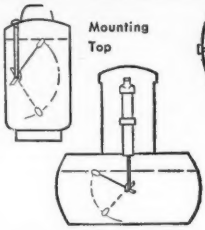
Ample facilities, plus long years of experience, add up to quality products built to create volume, profits, and goodwill for you.

Jackes-Evans

MANUFACTURING COMPANY

SAINT LOUIS 15, MISSOURI

For Safety and Accuracy Use Rochester Leakproof LP Gas Gauges



End or Top Mounting—Above Ground System

Top Mounting—Below Ground System

SAFETY dictated the design and construction of the Rochester LPG Liquid Level Gauge. The Magnetic principle makes it leakproof because no shaft pentrates dial chamber, which is sealed off from combustible tank contents. Even a broken crystal will not allow gas to escape.

There is a Rochester LPG Gauge for every type of above ground or below ground tank, for end, side or top mounting, for spheres, vertical or horizontal cylinders and bulk storage.

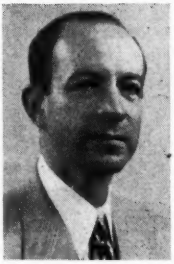
IMPORTANT FEATURES

- ✓ Temperature markings on dial indicate maximum safe filling levels as recommended by the Underwriters to eliminate the danger of tank failure though overfilling.
- ✓ A new rigid tubular steel support gives greatly increased protection to gears and center shaft against the hazards of shipping, handling and installation.
- ✓ Dial or crystal replacement has been simplified by a quickly removable sub-assembly.

Let us help you with your gauge problems. There is no obligation.

Rochester Manufacturing Co., Inc.
17 Rockwood St., Rochester 10, N. Y.

Rochester Guaranteed Accuracy **ENGINEERED INSTRUMENTS**
Liquid Level, Temperature and Pressure Gauges
Manufacturers of Fine Gauges for 32 Years



C. R. DOUGHERTY

CARSTENS SLACK

wholesale activities in that area. Mr. Slack joined Phillips Petroleum Co. after graduating from the University of Minnesota in 1940 and first worked at the Philgas bulk plant in Madison, Wis.

L. G. "George" Platt has also been promoted to assistant division manager at Minneapolis in charge of Philgas industrial, utility and superfuel sales, and engineer in the sales department's Milwaukee office.

Fine Products Co., Chicago, has recently been advised by Underwriters' Laboratories, Inc., that tests on their "Rapid moisture removers" have been completed and their use on LP-Gas systems has been approved.

Labels are now being prepared and will be sent to distributors for applying to units already in service. All new Rapid moisture removers will bear the UL label.

The promotion of Virgil C. Rice from director of product planning to director of manufacturing is announced by Judson S. Sayre, president of **Bendix Home Appliances, Inc.** He succeeds Harry L. Spencer, who resigned to become director of manufacturing for the Norge division of Borg-Warner Corp.

for

month-to-month

profits through better customer service

Customers appreciate the ***extra*** services you furnish. Use Micromet* to help you build your reputation as a trouble-shooting dealer.

Micromet is a slowly soluble phosphate that does not affect taste nor quality of drinking water. Fed into water systems using up to a million gallons a month, it puts an end to troubles like clogged water heaters, rusted tanks and red water stains. Micromet controls corrosion, lime scale and red water.

Simple, durable Micromet Feeders introduce Micromet into the water supply *automatically* . . . need recharging once a month. Write for the whole story now. Be the first in your territory to install Micromet Feeders and service them *on your regular calls.*

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Liquefied Petroleum Gas

Cities Service Oil Co.

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A DEPENDABLE SOURCE
UNIFORM PRODUCTS
A CAPABLE SUPPLIER
TWENTY YEARS' EXPERIENCE

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IN LP GAS ALSO
CITIES SERVICE
MEANS
GOOD SERVICE

•

CITIES SERVICE
OIL CO.
(Del.)

•

BARTLESVILLE, OKLA.
CHICAGO, ILL.
Other Sales Offices
Cleveland Kansas City
St. Paul Toronto

W. G. ANDERSON, JR.

W. G. Anderson, Jr., became The **G. S. Blodgett Co., Inc.**, representative for North Carolina, South Carolina, Tennessee east of the Tennessee River, Alabama, Georgia and Florida on July 1.

Mr. Anderson's address is: 326 Buckhead Ave., N. E., Atlanta, Ga.

This additional Blodgett service in the Southeastern states will help in expediting sales, and in facilitating service. Blodgett products include baking, roasting, cooking and general food service ovens.

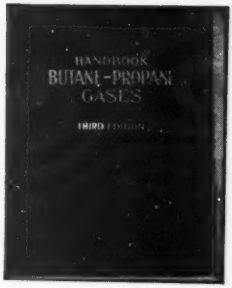
A new gas-making process, which provides a practical solution to the peak load problem of gas distribution utilities, will be demonstrated at the American Gas Association Convention in Atlantic City, October 4-8, by **Surface Combustion Corp.**

The "catalytic cracking process" for gas production, installed by Surface Combustion in the system of the Long Island Lighting Co. is of great significance to the gas utilities. It provides a new and efficient means of increasing peak load capacity with a minimum of investment in equipment and transmission facilities.

The process provides a means for converting, through catalytic cracking units, such feed stocks as natural gas, propane, butane, 26 RVP gasoline and "straight-run" gasoline, to a fuel gas having any combination of Btu value and specific gravity required to match the gas regularly supplied by the gas company through the mains to its customers.

This catalytic cracking plant is similar in principle to the several hundred

HANDBOOK BUTANE-PROPANE GASES



REVISED JUNE, 1947

- **Up-to-date technical facts on LP-Gases.**
- **352 Pages. Illustrated with Charts. Diagrams and Photographs.**

Check this partial list of contents.

INTRODUCTION
- The Progress of the Industry and the History of its Development.
- The ABC of LP-Gas, an Introduction to LP-Gas Operations.

PHYSICAL AND CHEMICAL PROPERTIES
- Properties of the Hydrocarbons in LP-Gas.
- Properties of Butane-Propane Mixtures
- Volume Correction Factors
- Analytical Determination and Testing

PRODUCTION OF LP-GAS
- Natural Gasoline Plants, Recycling Plants, Oil Refineries

TRANSPORTATION AND STORAGE
- Delivery by Truck, Rail, Water, and Pipe Lines
- Storage Tank & Pressure Vessel Design
- Liquid Metering and Pumping Systems

UTILIZATION OF LP-GAS
- Comparative Performance with other Fuels
- Appliance Installation and Testing
- Domestic Applications
- Commercial Applications
- Industrial Applications
- Enrichment, Peak Load and Standby Uses
- A Fuel for Internal Combustion Engines

DISTRIBUTION OF LP-GAS
- Installing and Servicing LP-Gas Systems
- Semi-Bulk Systems
- Bottled Gas Systems
- Gas Utility Service from Central Plants
- Multiple Utility Service from a Central Plant

REGULATIONS
- N.B.F.U. Pamphlet No. 58 (1947).
- Motor Carrier Regulations
- Freight Regulations
- Unloading Tank Cars
- Marine Regulations

APPENDIX
- Products Liability Insurance
- Handy Tables for Field Use
- The Interchangeability of Other Fuel Gases with Natural Gases
- Flame Weeding
- Bibliography
- Glossary of Terms

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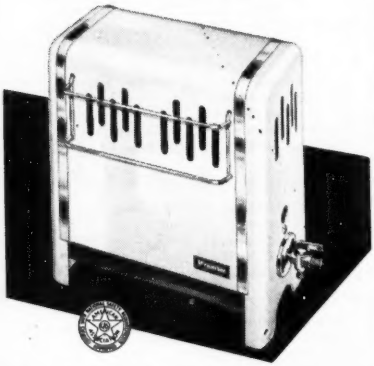
Premier

Small Room

GAS HEATERS



All Premier Gas Heaters are A.G.A. approved for use with L.P. gases as well as natural and manufactured.

Premier's super-efficient small room heaters have extra large heating capacity (14,000 Btu.), for quick comfort during cold snaps. They're a popular fast moving item. Available in white for bathrooms (illustrated) or brown porcelain enamel, both with chrome trim.

There are a few choice dealer and distributor territories still available—write today for details about our money-making proposition.

Premier

SINCE 1912

STOVE COMPANY

100 South Sixteenth Street Belleville, Illinois

gas cracking units which "Surface" has built for controlled atmosphere heat treating furnaces over the past 10 years. The equipment and chemistry technology are now being applied to the production of gas plants for utility peak load shaving.

The first commercial installation of this process went into operation in January of this year at the Riverhead plant of the Long Island Lighting Co. No holders are necessary since the process is a continuous one, no purification of the product is required and it is fed directly into the system.

"Surface" will also display its new Janitrol triple service hot water system for home comfort and also the new FEC winter air conditioner.

The A. O. Smith Corp. has announced that it has taken over the assets of the Burkay Co., of Toledo, Ohio, a company that manufactures large volume water heaters, high efficiency home heating boilers and gas conversion burners.

J. W. LONG

For several years the A. O. Smith sales organization has marketed the Burkay volume water heater under the trade name "Smithway-Burkay." The present move means that A. O. Smith is taking over all products of Burkay, and is thus acquiring items closely related to the domestic automatic water heaters that A. O. Smith makes in its plant at Kankakee, Ill.

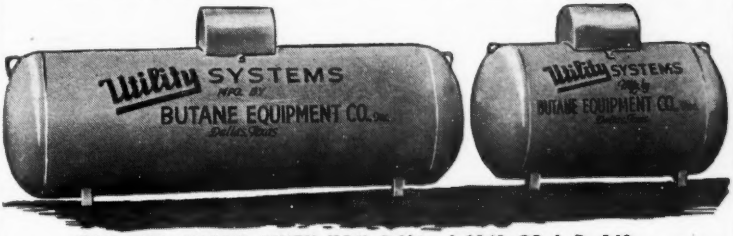
The Burkay assets include the trademarks, various patents, inventories of parts and finished goods,

PROPANE *Systems* ALL SIZES

FAST DELIVERY FROM OUR NEW LOCATION!

300 GALLON **500** GALLON **1000** GALLON

PROPANE ABOVE OR UNDER GROUND —— A.S.M.E. CODE VESSELS



YOU GET ACTION WHEN YOU CALL: L-3141 OR L. D. 140.....

ALBERT D. WHITE

Butane Equipment Co., Inc.

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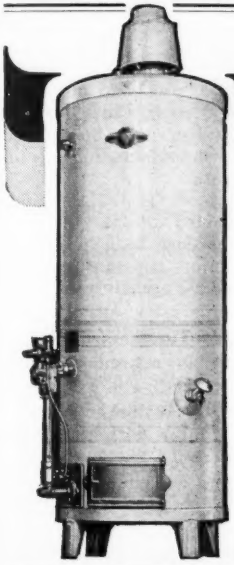
DALLAS, TEXAS



Outstanding

Quality...Styling...Value

Greater grows the demand for SECURITY Automatic Hot Water Heaters. More and more buyers seek the smart appearance, dependable performance, superior workmanship for which SECURITY is famed. Thousands of users are amazed at the efficiency, economy and long life of these gleaming Automatic Water Heaters. Operate on all fuel gases. Now is the time to look to SECURITY . . . for leadership and for sales!

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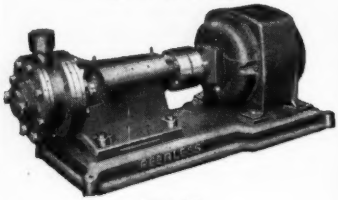
GAS FIRED SGP PRODUCTS

The "LONG-LIFE" LINE

SECURITY MANUFACTURING CO.
KANSAS CITY 3, MO.

For
Butane-Propane
SERVICE
PEERLESS
TURBINE (VANE)
PUMPS

For High Heads and Capacities up to 150 G.P.M.



Type XT

For efficient, low cost liquefied petroleum gas services including 1 p-g bottling, tank storage, truck, tankcar transfer, etc.

Most advanced in design and construction for maximum service and dependability.

Write for Details

PEERLESS PUMPS

Peerless Pump Div.
Food Machinery Corporation
Canton 6, Ohio — Quincy, Illinois
Los Angeles 31, Calif.

equipment and good will. The Milwaukee company is also taking over Westlake Products Company, an affiliate of Burkay located in Toledo.

Certain key personnel of the Burkay Company will join A. O. Smith. They include Adolph Burklin, who was vice president in charge of engineering; Henry Orr, vice president and general manager; and M. B. Mackay, field service manager.

The new operation will be under the direction of J. W. Long, manager of the Special Products Division of A. O. Smith. The division will continue to manufacture two types of the large volume water heaters. It will also make two sizes of heating boilers, one of 100,000 Btu input for average homes of 5 to 6 rooms, the other 190,000 Btu input for homes of 7 to 12 rooms and for commercial and industrial applications. Manufacture of the Smithway-Burkay gas conversion burners also will be continued.

Announcement has been made by Howard E. Blood, president of Norge division, **Borg-Warner Corp.**, of the appointment of Harry L. Spencer to be director of manufacturing of all five Norge plants.

Mr. Spencer succeeds J. Nall Candler, recently named director of manufacturing, who has been promoted to the position of assistant general manager of the Norge division.

Lew E. Spear, of Kalamazoo, Mich., has announced his retirement after 42 continuous years in the gas appliance business, first with the General Gas Light Co., later with the Ruud Manufacturing Co. He installed the first inverted gas arc lamp in the old Fulton Market in New York City; also, installed the gas lighting system in the old Madison Square Gar-

Deluxe
FIREPLACE
HEATERS
FOR ALL GASES

Vcheck Brilliant Fire
for
The Best in Heating

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CATALOG NO. 48

BRILLIANT FIRE
GAS HEATERS

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Engineers · Manufacturers · Designers
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ESTABLISHED 1846

JOHNSON
LP-GAS BURNING EQUIPMENT

Every industrial user a live prospect

• Hand torches - Bench soldering furnaces - Ring burners - Urn burners - Drilled pipe burners - Bunsen burners of all types.

When you sell Johnson
You sell the Best

Write for Catalog and Details

NEW
No. 36
Urn Burner

Lots of heat for little money. Use singly or in batteries. Wide variety of uses wherever heat is required.

5" overall height, 6½" long including gas cock. Gas consumption—36,000 B.T.U.'s per hour. 4" diameter burner head. Shipping weight—6 lbs.

JOHNSON GAS APPLIANCE CO (Since 1901)
597 E AVENUE N. W., CEDAR RAPIDS, IOWA

Use PITCO
'KEEP 'EM FRYING"

Frialators
REG. U.S. PAT. OFFICE

SAVE FAT . . . GAS SPACE

Deep-Fat Frying at Its Best

★ Customers can serve a wider variety of fried foods.

★ Left-overs or by-products quickly converted into daily specials.

★ Increase in customer business means increase in the gas load.

★ Actual saving in fat alone more than pays total cost of gas required to operate them.

J. C. PITMAN & SONS SALES CORP.
711-719 Broad St.
West Lynn, Mass.

den for the 1906 convention of the National Commercial Gas Association, predecessor of the American Gas Association.

With Ruud, he traveled from coast-to-coast on special sales assignments, managed the Detroit office for a number of years and more lately was a member of the factory staff at Kalamazoo. He plans to live in southern California.

J. W. OVEREND

John W. Overend has been appointed factory sales representative of **Superior Valve & Fittings Co.**, Pittsburgh, and will represent the company in the states of Ohio, West Virginia, eastern Kentucky, eastern Michigan, western Pennsylvania, western New York and the Province of Ontario, Canada.

Prior to joining the Superior organization as sales representative in the Philadelphia area, Mr. Overend was field engineer for the A. M. Byers Co., Pittsburgh.

Ray B. Fannin, who for several years has been with **Eaton Metal Products Co.**, Denver, is no longer with that firm. His work is being assigned to W. E. McCabe, J. R. Allen, and Lon D. Turner. These men will make periodical visits to the trade.

Shell Chemical Corp. announces the transfer of its administrative offices from San Francisco to 4 West 58th street, New York City.

The western division sales offices

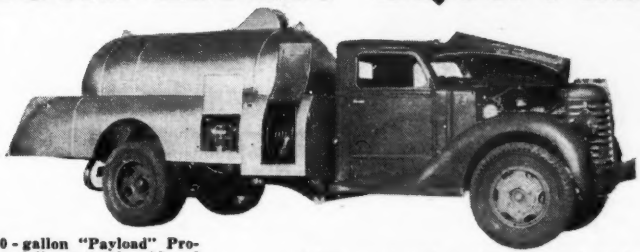
Butane & Propane

Producers of high quality
Liquefied Petroleum Gases Since 1931
Wholesale Only

THE CARTER OIL COMPANY

TULSA, OKLAHOMA

COMPLETELY EQUIPPED!



1200-gallon "Payload" Propane delivery truck sold and equipped by us for Central Propane Gas Co., Yakima, Washington

NOW we furnish a delivery truck tank completely equipped. Single or double tanks for Propane or Butane. Built under U68 or U69. For the best design and efficiency write, wire or phone us today.

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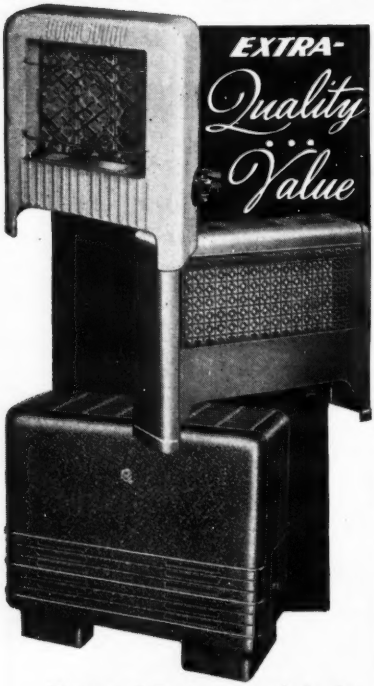

64 years of Peerless research in the Science of Heating and its allied problems of Engineering, Design, Styling and Finish has resulted in today's outstanding quality heating equipment.

★ *Made to Sell* ★ *Made to Last*
★ *Made to Satisfy*

Peerless
MANUFACTURING CORPORATION
LOUISVILLE, KENTUCKY

will continue to be located at 100 Bush St., San Francisco, and the eastern division sales offices at 500 Fifth Ave., New York. The offices of the export division will be at 4 West 58th St., New York.

F. J. HOOD

F. J. "Jim" Hood has been elected president of **Ansul Chemical Co.**, Marinette, Wisconsin. He succeeds Harvey V. Higley, who has been named chairman of the board of directors

Mr. Hood joined Ansul's California office in 1928. He worked in sales for eight years, returning to Marinette in 1936. In 1938 he was elected secretary and treasurer of the company. He was promoted to vice president in 1945.

Other officers elected by Ansul are R. C. Hood, vice president; H. C. Higley, secretary; J. F. Asell, treasurer; and S. R. Holmquist, comptroller and assistant treasurer.

Bob Johnson, widely known in the LP-Gas industry, has obtained a franchise for eight Western states to sell to dealers and distributors the attractive "Table Talk" magazine.

This is a consumer booklet for preferred lists of prospects. Containing much household information of interest, it also gives background facts on butane and propane, and is primarily directed to the housewife. One page is specially printed for the dealer buying the service.

RAPID MOISTURE REMOVERS

Now (UL) *approved!*

• Hydrostatic pressure tested for leakage and part failure, Rapid Moisture Removers were found to conform fully to Underwriters' Laboratories standards for design, construction and performance. Rapid Moisture Removers eliminate moisture freeze-ups. Install now for year-round *constant* gas service!

(UL)

- Approved
- Safe to use
- Easy to install
- Equipped with standard LH-P. O. L. fittings
- Available in a variety of sizes
- Refillable—can be used indefinitely
- Protects regulator from scale and dirt

YOUR WHOLESALER CAN SUPPLY YOU

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185 NORTH WABASH AVENUE • CHICAGO 1, ILLINOIS

You don't need Xray eyes to know that the new Rego 3100 Cylinder Valves bear close inspection - WE'LL HACK ONE APART!
Long Life Seat Discs
Leakproof Diaphragm
REGO LAP GAS EQUIPMENT
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I.C.C. CYLINDERS

GAS EQUIPMENT COMPANY, Inc.

P. O. BOX 566

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GEC GAS EQUIPMENT COMPANY, Inc.

Boost your gallonage . . .
. . . Balance your load . . .

enjoy a double profit with Mutual PLUMBERS' FURNACES

Mutual No. 2 Furnace melts 8" pot of lead in 12 minutes. Shield accommodates 6" or 8" pot. Develops 2350° F. Cylinder is I. C. C., built to Mutual's rigid specifications.

EASY-TO-SELL Mutual LP-Gas Equipment gives you 2 profits — 1 from your sale of equipment — 2 from your substantial, balanced sale of fuel to your industrial customers year in and year out. Join the hundreds of smart operators now cashing in on this easy, lucrative industrial business. Mutual furnaces and torches are fast, efficient and economical. With one demonstration they sell on sight to plumbers, tinsmiths, public utilities and many other industrial users.

Write today for full details.

Mutual

Liquid Gas Equipment Co., Inc.
3600 W. Imperial Hwy., Inglewood, Calif.

F. M. PAIN

Bastian-Morley Co., Inc., La Porte, Ind., manufacturers of Crane-Line water heaters and Basmor gas fired boilers, announces the appointment of F. M. Pain as sales manager.

Mr. Pain is well and favorably known in the industry, and with a record of 20 years sales background with water heaters, brings a wide experience to his new duties. For the past three years, Mr. Pain has been district manager for Rheem Manufacturing Co. Prior to that, he was with General Water Heater Corp. as district manager.

Rockwell Manufacturing Co. announces the appointment of E. E. Hedene to chief engineer of all operations of the Nordstrom Valve division. He was formerly the chief engineer of the Nordstrom Valve plant at Oakland, Calif., where for the major part of his 22 years of service he worked directly with Sven Nordstrom, the inventor and developer of the Nordstrom lubricated plug valve.

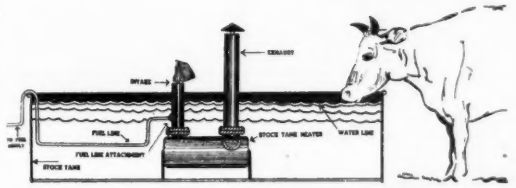
Mr. Hedene will be headquartered at the company's general office at Pittsburgh. His duties will include considerable field work in addition to coordinating the Nordstrom engineering activities at the Pittsburgh, Hopewell, Oakland and East Chicago

Waldorf Heater Co., Philadelphia, announces the appointment of Fred Thomas, 669 Seward St., Rochester, N. Y., to represent them in eastern and northern New York state, and Joseph J. Rosenthal, 24 Girard Ave., plants.

"ICE-FREE" Water in ZERO WEATHER

Use Butane, Propane or Natural Gas in the

"IRON MAN" STOCK TANK HEATER



- No Moving Parts
- Low Operating Cost
- Minimum Maintenance
- Long Life

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Try PIPETITE-Stik

Pipe Joint Compound in Stick Form

POSITIVE SEAL

for

Butane	Gas	Acid
Propane	Water	Brine
Gasoline	Air	Freon
Oil	Steam	Refrigerants

Officially Approved by L-P Gas Commissions

Handy as a Pencil

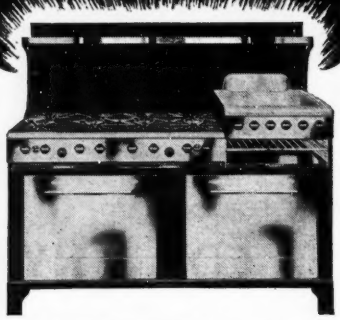
NO MESS
NO BRUSH
NO WASTE

CONTAINS NO LEAD
CONTAINS NO INJURIOUS INGREDIENTS

Order from your Supplier or Write us for Free Sample

Lake Chemical Co. 628 N. Western Ave., Chicago 12, Ill.

GLEAMING BEAUTY
with rugged strength
in every detail of design



Your cafe customers will take pride in the sparkling beauty of these new ECONOMY DeLuxe Ranges—they'll appreciate the long-lasting durability in every detail of construction. ECONOMY Ranges are custom built, with choice of burner and griddle arrangements. ECONOMY advantages giving your customers extra value include:

- √ Cast-iron top grates and welded angle-iron bracing throughout.
- √ Easy-to-clean nickel steel stainless finish on oven doors and trim.
- √ Heat-proof door springs never require adjustment.
- √ Ceramic reflectors on grill burners for fast broiling.

FREE—Be prepared to supply your customers with these handsome new ECONOMY Ranges. Send NOW for catalog 98-M showing ECONOMY DeLuxe Cafe Ranges and Griddle Ranges designed and engineered specifically for LP gas.

COMSTOCK-CASTLE STOVE CO.
QUINCY, ILLINOIS
ECONOMY
De Luxe CAFE RANGES

Hartford, Conn., who will represent them in the New England states.

Both men have been active in the LP-Gas trade.

J. R. Lavelle has been made manager of the New York City direct-factory branch of the **Ruud Manufacturing Co.**, Pittsburgh, makers of automatic gas water heaters.

New headquarters have been set up at the Harborside Terminal, Jersey City, N. J. and will serve Greater New York, northern New Jersey, several counties in southern New York and several in southwestern Connecticut.

The new branch will be fully equipped — warehouse, offices, service department and a full staff of salesmen to cover the area.

Kenneth E. Rose, who recently completed a course in business administration at the University of Wisconsin, has joined the **J. Rose & Co., Inc.**, Brooklyn, N. Y.

Kenneth Rose is the son of William Rose, president of the company. Among his duties will be customer contacts and export.

"Liquefied Petroleum Gases for the Steel Industry" was the subject of an address before the convention of the Association of Iron and Steel Engineers, held Sept. 28-Oct. 1, in Cleveland.

The topic was discussed by Frances E. Drake, chief engineer **Pacific Gas Corp.**, New York City.

Sheldon Thomas, former assistant to Robert W. Ward, vice president in charge of production of **American Car and Foundry Co.**, has been appointed assistant district manager of the company's Chicago plant, it is anounced by Mr. Ward.

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Gals.—1254 W.C. . 1090 Propane
Weight—3300 lbs.
Length—10' 10" . . . Dia.—58½"
Heads—¼" A-212 Hi-tensile steel
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Tanks are X-rayed and stress relieved
Working pressure—250 lb.
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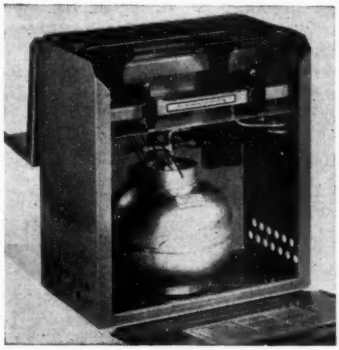

The KAMPER KING shown above is open and ready to light. Cover folds back to form shelf. Two burners supply immediate, fast heat. Small I.C.C. one-gallon tank is stored below and is easy to remove and refill.

Size: 16¾"x16"x9"
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KAMPER KING is the finest and most modern camp stove ever produced . . . the only advancement in camp stoves in the last quarter century. The "smart" camper will want one.

The KAMPER KING is safe, strong, durable; made entirely of heavy gauge steel. The tank will supply fuel for 16 hours (using both burners). Stove folds up like a suitcase; is easy to pack and transport. It has every safety feature; is simple to operate. It can be serviced by refilling the tank or by a quick exchange.

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AN estimate that demand for petroleum products will be 7% greater this winter than last, but that oil supply will be in balance with this record consumer demand was made by the Economics Advisory Committee of the Interstate Oil Compact Commission.

For the first time in its 13-year history, the Commission met in New York City, Aug. 30-Sept. 1, under the chairmanship of Governor Beauford H. Jester, of Texas.

The sessions brought together several state governors, a United States Senator, and many other representatives of the 20 states in the oil compact, as well as other experts and interested persons for the sessions held in the Hotel Roosevelt.

A predominant theme of the meeting was the ability of the states to handle successfully the control of oil and gas without a disproportionate amount of interference from the federal government.

Discussing the reasons for the butane shortage in Texas last winter, as well as the fuel oil shortage in various states, William J. Murray, Jr., member of the Texas Railroad Commission, gave the following summary of what he believed should be done:

"Let us as representatives of the oil producing states urge that more steel be made available to the oil industry—not for any selfish reasons but solely for the welfare of the nation and the petroleum consuming public.

"Let us use such steel as we can obtain in the wisest fashion possible

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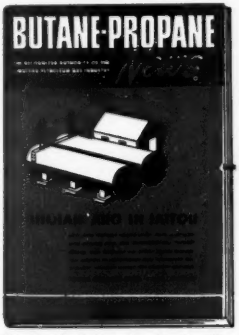

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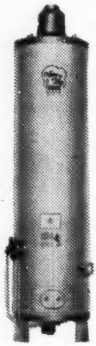

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to build additional butane storage so we will not have to flare butane in the summer months; to build compression plants and pipelines so we will not have to waste casinghead gas; to build conservation plants which will pump gas or water back into our oil reservoirs so that we may vastly increase oil recovery; and, finally, use our steel or casing to drill exploratory and development wells at a more rapid rate than ever before in our history, in order that we may as nearly as possible supply the appetite of our nation for oil.

"But until we can produce all of the oil that the nation desires without waste, let us not sacrifice our future and that of the consuming public, as well, to say nothing of our military security, by ruining our fields with excessive rates of production and other wasteful practices."

Col. Ernest O. Thompson, Chairman of the Texas Railroad Commission, declared that the Compact Commission has performed its work so well that "The threat of federal control is now breathing its last dying gasp—only the bureaucrats now want it, and they want it only for the centralization of power in their hands."

Talking on "Are We Running Out of Oil?" Senator George W. Malone of Nevada stated that under common sense federal policies encouraging exploration and development of actual and potential petroleum and natural gas fields and of synthetic fuels from oil shale and coal, it is impossible for the United States to run out of petroleum fuel in the foreseeable future.

The Interstate Oil Compact Commission is the conservation body embracing 20 oil producing states who promulgate regulations assuring maximum production from the wells of their individual states.